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The Correlation of Pre-clinical and Clinical Teaching *

I.—Medicine and Physiology

GEO. F. BODDIE

Before coming to grips with the subject proper, it is, I think, necessary to consider some general points that apply equally to subjects other than medicine and physiology. It seems to me that there are two main methods of teaching which are fundamentally different. In the first, the teacher endeavours to cast his students in a common mould which means, in many cases, that he is, perhaps unconsciously, endeavouring to produce replicas of himself or himself as he would like to imagine people think he is. To many people, this form of teaching appears to produce the so-called practical man. A definition of the so-called practical man is a man who makes the same mistakes as his father and grandfather did before him. You will readily appreciate that this form of teaching will very easily produce men who will conform to that definition.

It is unfortunate that a system of a peripatetic examination board tends to encourage the existence of this form of teaching, since the examination results obtained by it are not greatly different from those obtained by other methods of teaching. This is inevitable whenever a visiting examination board is the final arbiter in examination results. In the Report of the Advisory Council on Education in Scotland (Cmd. 7005), paragraph 765 reads: "The teacher's own tests are innocuous, but we find the case proved against the external examination. It involves defined syllabuses and uniformity of treatment, and thus dominates the curriculum. Useful during a period of rapid expansion, it cramps a secondary system that has reached full stature. It exalts memory, depresses the non-examinable and becomes an end in itself, so that even where it spurs to harder work, it destroys the finer educational values." The great fault in this system of teaching is that it does not develop the student's capacity to think; indeed, it often discourages original thought on the part of the student and so most effectively stultifies the student's desire for professional progress. The terminal part of paragraph 197 of the Report reads: "In any case, what matters supremely is not the precise amount of factual knowledge young people have acquired at a given age, but whether they are leaving school with alert brains and unblunted curiosity, responsive to excellence of every kind and possessed of such an abiding interest in the things of the mind as will keep them learning and wanting to learn all life long." Because of these contentions you will, I think, agree that any cast iron system of education has an effect on the profession as a whole that is disastrous.

The second method of teaching is that which appeals to the student's powers of deductive reasoning and encourages the student above all else to think for himself. I believe that this is the only sound method of teaching. It is essentially what we now call a long-term policy, but it is a method or policy which in the long run will give the results all true teachers desire. We have every reason to believe that this was William Dick's method and it was by this method he trained men like James Law, Duncan McEarchan and Andrew Smith, the veterinary pioneers of North America.

In applying this method, the clinical teacher must make use of the student's knowledge of the basal or pre-clinical sciences. The teacher must, therefore, have confidence that a sound fundamental basis of this knowledge has been laid down before the students come to him.

Building up from this basic knowledge, clinical teaching becomes a pleasant logical application of previously acquired knowledge and mere memory work is reduced to a minimum. By this method of teaching, clinical signs can be made vibrant with meaning and the student is encouraged and stimulated to investigate his cases to the full and to analyse his findings intelligently and so profitably.

I am afraid that it is not possible to confine this part of the discussion entirely to physiology, for physiology has an anatomical basis and clinical signs have a pathological as well as a physiological significance.

What then does the clinical teacher want from the teachers of the pre-clinical sciences? Let me illustrate the point with examples, commencing with the physical examination of the chest in a case of broncho-pneumonia.

First of all, the student must possess a sufficient knowledge of topographical anatomy to enable him to pick out the anatomical landmarks by which he can map out the area of auscultation and percussion and, more than that, he must have a clear conception of the disposition of the tissues situated under the part of the chest wall that he is examining. He must, of course, have a knowledge of the anatomy of the lung. The physiologists will have instructed him in the mechanism of respiration and I presume that he has a thorough understanding both of normal respiration and of the response by the respiratory system to increased demands on it. Thus the student is able, at once, to recognize deviations from normal respiration and is also able to form an opinion as to the significance of the abnormalities he encounters. Now, these abnormalities of respiration will necessarily have their effect on the circulation but our student, from his knowledge of physiology, has anticipated these effects and can discern from his examination of pulse and heart the case in which there must be anxiety lest cardiac failure should complicate the issue.

However sound the knowledge of physiology possessed by our student, he cannot fully understand abnormal findings on physical examination of the chest without a knowledge of the pathology of broncho-pneumonia and, if his comprehension of the pathology is to be intelligent, he must also be aware of the bacteriology of the disease.

Now our student percusses the chest. This brings physics into the story and, of course, biophysics. He finds some dullness in percussion which he must interpret in terms of physiology and pathology. He auscultates the chest; has he already a thorough acquaintance with normal respiratory sounds; if not, how is he to recognize the abnormal? Have the physiologists taught him the normal respiratory sounds? Have they taught him to use a stethoscope? Surely, listening to a normal chest is just as much a physiological investigation as using an ophthalmoscope in a normal eye. So our student detects some abnormal sounds, such as mucous sounds and crepitation. He knows they are abnormal. He knows the pathological-physiology of pneumonia, so he can interpret them.

Early in his examination of the patient, he will have come across some evidence of fever. What is fever but a physiological defensive response? Have his teachers in physiology dealt sufficiently with the mechanism of heat regulation and the changes from normal and the effects on general physiology of an increase in the body temperature? If they have, our student sees clearly how fever fits into this clinical picture.

All of this points to a desire on the part of a clinical teacher that the physiologists should teach the normal and the manner of deviation from the normal with an eye to the application of this knowledge in the clinical years.

Let us now consider the kidney, and the correlation of its physiology with clinical work. The physiologists, building on the foundation laid by the anatomists, will have provided the student with a philosophy of renal function. That is important, for the clinical signs of renal disease are remote and all arise from the effects of disturbances of renal function, but the suspected presence of renal disease must be confirmed by urine analysis. Many students can carry out the purely technical process of urine analysis but fall down in the interpretation of their results. There does not seem to be enough correlation between the laboratory bench and the living animal. Few seem to realize that the abnormalities in urine can be divided into (1) pre-renal and (2) renal and post-renal. Yet this quite simple fundamental point is often of the greatest help in the clinical interpretation of urine analysis. There is an unfortunate tendency to-day for students—and graduates—to be obsessed with laboratory diagnosis when, in fact, all

* Discussion by the Association of Veterinary Teachers and Research Workers, at the first General Meeting of the Association, held at the Royal Veterinary College, Camden Town, N.W.1, on April 12th, 1947.

these laboratory procedures are only aids to diagnosis. Success in the clinical investigation of a case depends on knowing which laboratory aid to use and how to interpret the results. Here, the physiologists can be of the greatest help to the clinical teacher by laying down clearly the purpose of biochemical investigations and by correlating them with the living animal.

Similarly, there are many points of general physiology where the teacher of physiology can help to make sound the foundation of clinical teaching. For instance, normal pulse taking: why have the physiologists allowed animal management to do this and trespass on their rightful domain?

Do the physiologists pay enough attention to defaecation, especially in farm animals? The medical student has grown up with his future patients. Many veterinary students do not possess a sufficient knowledge of animals in health. The teachers of physiology can make a valuable contribution to veterinary teaching by directing the student's thoughts to normal physiological processes in the domestic animals; then the students will recognize the abnormal by contrast with the normal.

PHYSIOLOGY

A. T. PHILLIPSON

Two conclusions can be drawn from what Professor Boddie has said. The first is that those concerned with teaching physiology should be well acquainted with clinical problems and conversely that the clinician should keep himself up to date in physiology. The second is that the physiology taught in the pre-clinical years should be based as far as possible upon the animals with which the student will have to deal in practice.

The best way to achieve the first objective is for the physiologist and clinician to undertake joint research on specific problems, and by this I do not mean that the physiologist (I use the word physiology in its broadest sense to include biochemistry) should be expected to analyse and report on a large number of samples of urine or blood at the will of the clinician, so that the laboratory becomes merely a glorified aid to diagnosis, but that experimental work designed to test critically any reasonable hypothesis concerning the aetiology of a specific condition is carried out in a properly controlled manner. Professor Boddie emphasized the importance of physiology as an aid to diagnosis; I would emphasize it as the basis of experimental medicine, for physiology used in the broad sense means the understanding of the normal and the explanation of any deviation from the normal.

The artificial barrier that so often exists in the mind of students between what are called "theoretical subjects" such as physiology, and what are called "practical subjects" such as medicine, is one of the biggest obstacles to be surmounted in teaching, and the best way to get over it is for students to see and hear about experimental work going on in their college, in which the physiologist and the clinician are both engaged.

It is an interesting fact that in the syllabus laid down by the R.C.V.S. the minimum time allotted to physiology, including biochemistry, is 150 hours, while the time laid down for medicine is 400 hours, if the 30-odd hours allowed for meat inspection is deducted. I am not suggesting that the time allotted to medicine is too long but that the time given to physiology including biochemistry is too short. The basic subject is starved. On account of this it is not difficult to see why students arrive at the clinical years in a state of mental indigestion. One year for physiology, including biochemistry, means that there is insufficient time for students to assimilate more than a smattering of the subject, for insufficient time tends to produce rigid cut-and-dried teaching. In addition one year is little enough time in which to teach general physiology without going into the special physiology of domestic animals besides the cat and the dog, and this brings one to the second objective.

When it is suggested that more emphasis should be placed upon the physiology of farm animals the usual retort is "How can we teach large-animal physiology when there isn't any worth speaking of?" This is an argument which is not easy to answer, for admittedly a large section of physiology is based on work done chiefly on man, and the dog, cat and rabbit. Veterinary physiology as it stands to-day is confined largely to the alimentary and reproductive systems, and although by careful selection from the literature greater emphasis could be placed upon farm animals, in most aspects of physiology the basis of the subject matter must rest upon current physiological concepts irrespective of their origin. It is the fault of the whole profession that this is so, for the basic physiology of farm animals has never received in this country the attention it deserves. The clinician may well say, "How can I apply physiology to conditions such as 'grass sickness in horses' when the basic physiology of the alimentary tract of the horse is largely unknown?" Similarly the physiologist can well say, "How can I emphasize the physiology of farm animals when I don't know anything about it, and the books don't tell me much?" The solution is obvious; if both the physiologist and the clinician know the need for basic research into the physiology of farm animals and the application of physiology to the many clinical conditions that are mysteries, both should engage themselves in experimental research to find out the answers. This type of research should be carried on in veterinary colleges so that students will see from first-hand impressions the manner in which knowledge is built up and the practical importance of physiology. This aim is a long-term one, for its success depends upon enough staff with the requisite training being available to allow sufficient time for serious research. To achieve this end the more young graduates who are encouraged to take up physiology or biochemistry for post-graduate study the better.

As an immediate measure to improve the correlation between physiology and medicine an additional course of study in the applied physiology of the farm animals should be instituted. Whether this course should come in the third year or later in the clinical year is debatable. The need for it is urgent, for if those lectures are given by men who understand both the physiology and the clinical aspects of the work then some progress in the correlation of the two subjects can be achieved at once.

Similarly with nutrition—if I may stray to a closely related subject for a moment—the feeding of farm animals, particularly of ruminants, is still based on empirical standards; how much more interesting to introduce students to the study of nutrition by a comprehensive series of lectures on digestion and on energy metabolism of farm animals in which the principles of nutrition are clearly explained and the shortcomings of the present-day feeding standards are pointed out. Many more instances could be given, but modern physiology and biochemistry is now such a large subject that no one can hope to be expert in all branches of it; consequently, the wise clinician will ask the physiologists or biochemists on the staff to lecture on the application of his subject in his course, for by doing so he will:—

(1) give the students the opportunity of getting a firm grasp of the fundamental principles concerned so that he has a sound basis on which to build;
(2) demonstrate the fact that physiology, biochemistry and medicine are intimately linked together;
(3) point out that advance in the "science" of medicine as opposed to the "art" of medicine depends upon fundamental research.

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II.—Pathology and Surgery

PATHOLOGY

G. O. DAVIES

What is the relationship between these two subjects? Is there any relationship? If so, what is its significance? That, I take it, is the subject of my paper. If I might venture to give a short answer to this question it is, that a knowledge of pathology is indispensable to the present-day surgeon. Pathology is, to quote one author, "the grammar of practical medicine and surgery."

Boyd, in his text-book of Surgical Pathology, states that the history of surgery can be divided into two parts. There is the period before, and the period after, the great surgical pathologist, John Hunter. Before Hunter, surgery was content to remain an art founded on empiricism; after him it aspired to be a science founded on pathology. It is well known that by a process of trial and error very considerable proficiency and skill can be, and has been, acquired by many who have never received any professional training. Treatment practised on such a basis is empiricism. Unfortunately empiricism is not confined to those without the medical professions. It is far too common, to some degree, within the professions and it is most evident in those who failed to gain a correct appreciation of pathology in the course of their undergraduate study or have failed to apply that knowledge in their particular spheres of professional activity.

Lest it should be thought that I think pathology to be the only pre-clinical subject worthy of attention let me, first of all, define very briefly the relationship of pathology to the subjects which precede it in the undergraduate curriculum.

Pathology is the study of the abnormal in relation to anatomy, physiology, biochemistry and that lesser known subject of biophysics. These subjects form the corner-stones on which rests what I am pleased to call the foundation subject of pathology. To continue the metaphor may I add that these corner-stones not only support the foundation but also enter into its substance and form an integral part of it, so that we distinguish in pathology such aspects as pathological or morbid anatomy, pathological histology, physiology and biochemistry.

What purpose does the study of pathology serve? Pathology, I must point out, is not an end in itself. Just as a foundation performs an indispensable function in constructional work so is a sound knowledge of the principles of pathology essential for a full appreciation of clinical medicine and surgery. Its purpose is to bring together all the available knowledge concerning the aetiology, course and effects of disease so that methods may be devised and applied for its prevention, or failing that, for its control, eradication or alleviation by therapeutic or surgical means. To-day I am more concerned with its application to surgery.

A knowledge of anatomy adds to one's skill and surgical technique; a knowledge of physiology enables one to create one's own standard of the animal in health—that is the normal; but if a medical practitioner is to reason for himself why any particular line of treatment is called for or why such and such a surgical procedure is likely to be of benefit to the patient, then a knowledge of pathology is, to my mind, a *sine qua non*. He who practises empirical methods pays scant attention to the aetiology or the evolution of a disease process or the influence which that disease has on the health of the animal. He contents himself with treating the condition as he finds it. He knows from experience that by adopting certain forms of treatment, he at least does no harm, even if he does no good, and incidentally makes no mean living.

Whilst most people will concede that a knowledge of pathology is a great asset to a surgeon, it is possible that some may not go so far as to agree with the view which I have expressed that it is indispensable to modern surgery. Much of this doubt is probably based on one's conception of what is meant by the term pathology. To the practitioner of a generation ago, the term pathology was practically synonymous with morbid anatomy, for the subject was established almost entirely on the findings of the *post-mortem* room. Invaluable though an extensive *post-mortem* experience is, and excellent though the results of this experience have proved to be in building up the pathology of the past, one cannot overlook the fact that this restricted study and outlook has tended to convey an entirely erroneous impression of the scope of the subject.

Pathology connotes the scientific study of disease in all its aspects—it is a study of a series of active processes, not of a multiplicity of independent states. That which is seen in the *post-mortem* room is but one stage and usually the end of a process and it is the stage which has received most attention. That it must continue to receive very considerable attention there can be no doubt, but it must not be done to the exclusion of what Moynihan has spoken of as the "pathology of the living." The most important aspects of a pathological process are not the final stages but the early and intermediate stages, and a thorough understanding of the changes which the tissues are undergoing during these stages is all-important to the surgeon. It is during these early stages that there is some hope for the patient and if the surgeon or clinician is familiar with the changes which characterize lesions in their various stages of development, he is better able to assess the value of, and to determine the particular method of, surgical interference. Of what use is an exploratory laparotomy unless the surgeon is something of a morbid anatomist? How can he hope to achieve success without a knowledge of the fundamental principles of repair and regeneration? How can he hope to encourage the healing of a wound unless he is familiar with the various factors which militate against healing? Too often, I am afraid, is it overlooked that the presence of necrotic tissue in a wound or the too liberal application of disinfectants hinders rather than facilitates repair. Even in a comparatively simple procedure such as suturing the tissues, how much consideration is given to the possibility of pressure necrosis due to the application of too much tension? These are all small things, but it is lack of attention to these small matters which so often militates against the satisfactory termination of what otherwise would have been a successful surgical operation.

It is also important to remember that surgery of itself does not produce healing or regeneration. It aims at removing the obstacles to healing and allows nature to operate unhindered. Great care should therefore be exercised to ensure not only that all the factors which impede repair are removed surgically but also to ensure that nothing is done in the course of or after an operation by way of indiscriminate application of so-called antiseptic solutions, powders or the too frequent dressing of a wound, factors which in many cases are as great a hindrance to repair as the lesion which has been removed.

I had intended making a reference to the bacteriological aspect of the subject but as bacteriology is to receive special attention later, I shall not do more than make a casual reference to the delicate question of sterilization, in which there would appear to be at least three standards—a bacteriological standard, a surgical standard and the general casual standard so widely followed in general practice. It only as much attention were given to the application of sterile methods as is given to the nature and dosage of the drug injected or infused into an organ, I think the outcome of some of our therapeutic measures would be more likely to redound to the credit than to the discredit of our profession.

I have already referred to the need of the surgeon for a sound knowledge of the principles of inflammation and repair and I think it would be an omission on my part were I not to add to the list that group of conditions included under the title Vascular and Circulatory Disturbances. The embryo surgeon may gladly discard his interest in pathology when he first launches out on his career but I am quite sure he will not proceed far or with much success if he ignores or is not prepared to keep himself up to date on such questions as shock, oedema, histaminosis, dehydration, etc. How many practitioners, I wonder, are still quite clear in their minds of the salient differences between oedema, congestion and inflammation? I do not say this in any sense of reproach but merely to indicate that with a greater familiarity with these pathological changes, their cases would prove far more interesting and they would in turn be less likely to operate only as a last resort.

There are many other instances which I could quote to illustrate the influence which pathology has or could have on surgery but in the few minutes remaining for me, I would rather like to say a word or two about the even greater service which we pathologists could be if we ourselves only paid more attention to what I have already referred to as the pathology of the living tissue, namely, pathological physiology and biochemistry. More enquiries along these lines would enable us to correlate qualitative and other changes in secretions, excretions, blood, etc., not only with structural changes in the tissue but with the objective signs of ill-health. A greater study of these various fluids would probably also indicate to us where microscopic changes might be found in diseases which all too frequently have to be reported as "showing no characteristic gross changes." All appreciable changes in behaviour must surely have some, even though microscopic, structural change as their basis. A routine study of the blood would frequently provide the answer to the question when or when not to operate, quite apart from furnishing some guidance as to the prognosis of the case.

A much greater use could also be made of biopsy as a means of determining with greater exactitude the nature of the problem confronting the surgeon and incidentally it would fill many gaps in the knowledge of the pathologist. At present our knowledge of clinical pathology is very deficient but I must point out that for this the pathologist is not entirely to blame as the view that he is concerned only with moribund or morbid material dies hard.

In concluding this short paper on the influence of pathology on surgery I hope I have succeeded in adding emphasis to Osler's well-known words "As is our pathology so is our practice." Without a knowledge of things pathological the surgeon at best is little more than a hewer of flesh and a drawer of blood. He flounders along in an aimless fashion, sometimes hitting the malady and sometimes the patient (and what is more important) without knowing which.

SURGERY

C. FORMSTON

In opening my part of the discussion I am not certain of the precise terms of reference. If my impression is a correct one, and I am restricted to the correlation of pathology with surgery, then the field is too narrow and it must be pardoned if I break down the fence and spread my remarks over some of those subjects which have a distinct bias towards the making of a good surgeon.

The question to be answered is how best we can teach to produce an efficient veterinary surgeon well qualified to think and practise veterinary medicine and surgery in their widest and most comprehensive terms. It is the duty of teachers of pre-clinical subjects to bear this in mind rather than to concentrate on the manufacture of specialists in their own particular subjects. The pre-clinical teacher must not only be expert in his own subject, but should be thoroughly conversant with modern trend and thought in clinical medicine and surgery so that there is always present that little bias in favour of clinical application.

As I see it, the object of this discussion is not to criticize teachers of particular subjects, and I have no wish to do so, but I wish to ventilate my feelings as to what is required to fit the student to enter his clinical years receptive and in a fit state not only to understand but enjoy the work and teaching he ultimately encounters.

I believe that the present-day student is being forced to learn too much detail in the pre-clinical subjects with the result that

clinical teaching is now overburdened by having to recapitulate very extensively those fundamentals which the student should have retained from his pre-clinical years. One can cite as an example of this the fact that before one can discuss the surgical diseases of the flexor tendons of the horse, a considerable time has to be spent in convincing the student that the horse has a perforans and a perforatus, and that he really was taught this in his course in anatomy. Having got so far, the relationship of these structures to other hard and soft tissues has to be discussed along with their physiological action, in order that the cause of diseased conditions shall be appreciated. Before proceeding to pathological change and the process of repair, the histological structure of tendon tissue has to be reviewed because it has by this time been forgotten. It must be evident, therefore, that the clinical teacher must possess a reasonably good everyday working knowledge of a number of kindred subjects if he is to do justice to the teaching of his own. Is there an equal reciprocity on the part of the pre-clinical teacher? Is there need for a closer liaison between teachers of certain subjects? Perhaps the voice of this meeting will supply the answer.

After this most inadequate preamble, I will confine the remainder of my comments to the pre-clinical requisites of my own particular subject, namely, surgery. It is my contention that if the student has applied himself diligently to the subjects taught in his earlier years, he should have little difficulty in understanding and mastering a knowledge of surgery—operative and otherwise. The least important branch of the subject is the operative one, for it is akin to plumbing, where, with the application of a little common sense, practise makes perfect. I do not wish to under-rate the value of operative surgery, but, at the same time, it has not to be forgotten that the greater part of our work is of a non-operative character and calls for a thorough understanding of tissue reaction and repair without surgical exploration. There can be no doubt, then, that the subject which has most bearing on surgical disease is pathology. Without adequate knowledge of pathology the surgeon can have no clear appreciation of the trend of diseased processes, no idea as to when or whether surgical intervention is necessary and no idea of the ultimate outcome of such interference. In other words, he must be aware of the different destructive processes in the various tissues, and the nature and power of repair of individual structures. Having evaluated these he is in a position to offer a reasoned prognosis.

Operative surgery is, in my view, the art of veterinary science and has no time for *post-mortem* room technique or methods. The operator must realize that he is not only dealing with a living animal but that animal is made up of individual living cells, which must be treated with the utmost delicacy and respect. All the sterilization in the world will not replace technique. Undue handling of tissue renders it incapable of resisting or overcoming contamination and infection. Exposure of tissue, the brutal use of artery forceps, the use of tight sutures are practices adopted by the person ignorant of the pathological processes involved, especially of tissue reaction and repair.

It is to non-operative surgery that I would now turn, and it is in this respect that the pathologist can be of invaluable assistance. I am fully aware that the following suggestions are fraught with serious difficulties, particularly at this time of huge classes and depleted and inadequate teaching staff. While realizing that the main obstacle is the lack of animal material, I would suggest that more "Living Pathology" might be demonstrated. If this is to come about it is not out of place here, at a time when the teaching in some of the schools is split up through the acquisition of Field Stations, to point out that efficient teaching can only be conducted when a plentiful supply of clinical material is available and shared with the pathologist so that a pathological link in the chain of teaching can be well and truly forged. Crystallized out, I would like to see diseased animals discussed in an atmosphere of pathology during life as well as in the *post-mortem* room. Malignant disease, joint, bone and tendon disease discussed in the living animal would give a much more realistic definition to the term "inflammation," and would help the student to appreciate that the term meant more than the observations of Celsus or the researches of Metchnikoff. Surgical pathology should not be confined to surgery and could, with advantage, receive attention in pre-clinical teaching.

One wonders, also, if too much time is not given to the teaching of descriptive and systematic anatomy, and whether there is too little emphasis laid on applied or surgical anatomy. To the pure anatomist the facial sinuses are cavities bounded by bony walls; the bones concerned are remembered by the student with the aid of mnemonics. The student's only interest is to remember sufficient to pass his examination. Casual mention of the fact that they are often the seat of infection in equines would probably kindle a brighter spark of enthusiasm and would suggest to the student that there will come a time when he will have cause to apply this anatomical knowledge. Likewise the commoner paralyses might be mentioned when discussing the distribution of the main peripheral nerve trunks.

I would like to see more attention given to the distribution of nerve trunks and the sites where these nerves are blocked in regional anaesthesia. Again, anatomy of the spinal cord, its meninges and its bony wall would be of vast significance to the anatomy student if a needle was introduced in a site commonly adopted in epidural anaesthesia, and an analine dye introduced before dissection.

I would like to see the physiologist take a class on ruminant digestion with a ruminating bovine in front of him. The student would then arrive in his final year able to appreciate normal reticular and rumenal movements.

The physiologist alone, or in conjunction with the pharmacologist, should have the opportunity of demonstrating the action of anaesthetics and narcotics, the action of commonly used drugs such as atropine, cocaine, etc.

Methods such as these would make the teaching much more realistic and would be something more tangible to which the memory of the student would more easily cling. My suggestions are not all easy to carry out, but I would suggest we try something along these lines.

Finally, I would emphasize that these remarks are in no way a criticism of pre-clinical teaching; I was asked to air my views and I have done so. If from the gathering I can glean ideas on how to improve the teaching of my subject to the benefit of the student and the veterinary profession, I shall be grateful.

III.—Bacteriology and Preventive Medicine

BACTERIOLOGY

M. LEVI

The fact that our Council have chosen the subject we are discussing to-day implies their awareness of its importance. The need for correlation of pre-clinical and clinical teaching has grown out of the enormous advances in veterinary and comparative medicine. The complexities of imparting that knowledge to would-be veterinary surgeons—and I stress the words veterinary surgeons—make it imperative that all the subjects taught in the curriculum should not only follow one another in the right sequence but should also be interwoven with one another, correlated with one another and so integrated as to form one whole discipline of thought and action. All the subjects taught at present in the veterinary course are of equal importance in so far as they tend towards making the student understand intelligently the fundamentals of animal health and disease, and the principles of and methods used in the acquisition of that knowledge.

Lip-service is continuously paid to the necessity of reducing the grossly overcrowded curriculum. "Overcrowding" the students' time and especially his mind with a mass of facts defeats the purpose of sound education. It is up to every individual teacher first to find out what pruning can be made in his own subject without detriment to the final goal and then to try to persuade the examining bodies of the advantages involved.

I may have appeared to digress from my subject, which is the teaching of bacteriology in its relation to other pre-clinical and clinical subjects and more especially to preventive medicine. To deal more specifically with this topic, may I be permitted to describe the stage at which bacteriology comes into the veterinary curriculum. The student before delving into bacteriology would have undertaken:—

(1) A general science course comprising the subjects of biology, chemistry and physics.

(2) A pre-clinical course dealing with the different aspects—structural and functional—of the animal in health, *i.e.*, anatomy, physiology, and animal husbandry. Pathology, of which bacteriology is only one sub-division—but at present a very important one—takes the student on at this stage and prepares him for a better understanding of clinical medicine and surgery.

The subject of veterinary bacteriology as taught at present in the Royal Veterinary College is sub-divided into (1) an introductory general course on the biology of micro-organisms, bacteria, moulds, fungi and viruses; (2) a general study of the mechanisms of immunity and the dynamics of health and infection, and (3) what may be called applied veterinary systematic bacteriology, especial emphasis being placed on the study of the pathogenic members and the diseases they produce. The clinical aspects of infectious diseases are at present discussed more fully than they are done in pathology—by the Department of Medicine.

Pruning of the course of bacteriology can be effected by reduc-

ing the details under 1, 2 and 3, but as 1 and 2 deal with very little detail and more fundamentals, I personally think that our main efforts should aim at pruning the systematic bacteriology.

Students starting the course of pathology have already had a basic training in the pre-veterinary and pre-clinical subjects. These fundamental acquisitions tend to be forgotten and it is our duty in introducing general bacteriology constantly to remind the students of those general principles of biology and to demonstrate their applications in the field under study. This is not difficult, as the anatomy and physiology of bacterial agents bear a close resemblance to that of living cells and living animals. Tuition in bacteriology should convince the student of the spiritual advantages of pinning his professional faith in the experimental approach to the study of disease. Bacteria constitute materials of choice on which to demonstrate function as a basis of physics and chemistry. The same methods of approach that were devised by Harvey and Claude Bernard—the fathers of experimental physiology—have been used by Pasteur and Koch.

The study of the role of micro-organisms in health and disease should not so much tax the student's memory as supply him with matter for thought. The mechanisms of resistance and infection illustrate vividly the inter-play of the different factors involved, micro-organisms, animal host and environment.

The teaching of pathology should not only strive to consolidate the ground already covered by the student in his pre-clinical years but help to prepare him for the responsibilities awaiting him in the field. There can be little doubt that the course of pathology and bacteriology should not aim to turn out pathologists or bacteriologists but veterinary surgeons. This outlook has been called veterinary bias—bias is definitely the wrong word because it does connote prejudice. For a teacher in a veterinary college there is no prejudice involved in giving to one's teaching a veterinary bend. I fully agree that each subject—pre-clinical or not—must in its own time contribute something to the broad general outlook of knowledge, but we should not lose sight of the aim in view which is to prepare the student for a successful career in general practice.

Pathology and bacteriology must therefore be correlated with clinical teaching. Part of the training in pathology should be spread into the clinical period because—as the Committee on Medical Education of the Pathological Society puts it in the Good-enough Report—"The student is best able to appreciate the value of aspects of pathological knowledge when he has acquired a certain amount of clinical experience, just as a certain amount of pathological instruction is an asset to the student who is acquiring clinical experience." We all agree, I think, that the students—as is stated in the Report—should see at frequent intervals actual collaboration between clinicians and pathologists of various specialities, be they morbid anatomists, parasitologists, bacteriologists, clinical and chemical pathologists. The educational value of this collaboration to both teachers and students is such that notwithstanding all difficulties we should constantly strive to bring it about and to perfect it as days go by.

The correlation of pathology and medicine and surgery gains a great deal in having prevention as its motto. Preventive medicine is occupying so much of the veterinary surgeon's time in practice and yielding so many results that the course of pathology should encourage that outlook. Preventive medicine is interested in disease in so far as "removing or altering aetiologic factors and/or increasing the resistance of the host" (Boyd) is concerned. When in the course of bacteriology we discuss the nature of infectious agents, their source, their modes of transmission, the responses of the host, the dynamics of epizootics, are we not really teaching what are probably *at present* the most important aspects of preventive veterinary medicine?

The degree of correlation that can be achieved between the various subjects depends on the suitability of the teachers, their relative number to students, and the facilities available. Recruits to the teaching force should be encouraged to move from one department to another in order to grasp the problems in their entirety and to pave the way for that correlation between the different subjects for which we all yearn.

PREVENTIVE MEDICINE

S. J. EDWARDS

I would like to preface my remarks by saying that my main theme will be to consider the inter-dependence of bacteriology and preventive medicine. Also, I shall try to point out what I consider to be the essential uses and limitations of bacteriological methods in the prevention and control of disease.

Dependence of Medicine on Basic Sciences.—Preventive medicine is not a self-sufficing entity. It is, as we know it to-day, the application to the prevention of disease of knowledge drawn from a wide variety of ancillary sciences, ancillary only in the sense that they have services to offer to preventive medicine, and not in the sense that their business is to be the servants of medicine. Medicine in fact could never have advanced itself very effectively or very far. It had to wait until other branches of science were ready to solve its fundamental problems.

From the time of Pasteur onwards, the great majority of investigators have been concerned with what bacteria do rather than what they are and how they interfere with the health of man and animals rather than how they function as independent living beings. In the past, and again in present-day veterinary research under a utilitarian regime, we see a great tendency to regard bacteriology as an applied rather than a pure science.

I would suggest that bacteriology should exist as an independent science, both for teaching and research in the same way as other basic pre-clinical sciences contributing fundamental knowledge to medicine such as pathology, physiology, biochemistry and hygiene including dietetics. Only when each science is allowed to develop independently will each contribute its full share towards the advance of knowledge.

General Scope of Preventive Medicine.—I would say that preventive medicine must be taught as a separate subject from clinical medicine. While the latter is concerned with the animal no longer in a state of health due to disordered function, the former is concerned with the preservation of health.

A present-day criticism of our methods of teaching and instruction is that we in this country try to separate too widely disease studies from those appertaining to the productive animal in good health. That criticism may be true to a certain extent, in that there has been inadequate attention, at least in my day as a student, paid to the principles of sound husbandry, and lack of opportunity to have explained in a practical way the application of these principles in the prevention of disease. However, there is a limit to the subject matter that can be dealt with in a course of preventive medicine, and the student may be assumed to have profited from his specialized teaching in the basic subjects, so that only the essential data relevant to disease control need be repeated in the course of preventive medicine.

There seems to be a tendency to emphasize the role of nutrition in the prevention and causation of disease, and to regard the infecting organism as something secondary. In the absence of sound knowledge from nutritionists and geneticists, it would be unwise not to regard bacteria as the primary aetiological agents, while factors such as poor hygiene and husbandry play a secondary role. Such methods as have been successful in the past therefore will continue to be employed in combating disease until some other method or system of management offers hope of replacing them. Bacteriologists generally are satisfied if Koch's principles apply to a suspected organism, that it is the active cause of disease, and they are not easily diverted from methods which primarily aim at combating that organism. These methods can be greatly implemented by the application of sound principles of animal husbandry which include correct feeding, pasturage and housing.

Subject Matter Covered by the Two Courses.—The pre-clinical teaching in bacteriology should follow an orderly plan of dealing with the different genuses of bacteria. The teaching should embrace the general biology of the organism, including its morphology, metabolism, resistance, antigenic structure and pathogenicity; also the detailed pathology of the lesions which it causes in the different species of animals should be dealt with together with its immunological reactions. In the later course in preventive medicine, the further teaching relating to diseases caused by pathogenic organisms should include epidemiology, diagnosis, pathology in so far as it appertains to *post-mortem* diagnosis, and, lastly, control.

Epidemiology.—When considering the epidemiology of a disease caused by a particular organism it is important to stress not only the occurrence of disease in one particular farm animal but also to consider its infectivity for other species including wild rodents. In this connection it may be that we have neglected our studies of infections occurring in British wild fauna and their investigation may offer a clue to the recurrence of disease in our farm stocks. Equally important is it to stress the resistance of organisms and their habit of life. For instance, those which are strictly obligatory parasites may offer an easier problem in devising preventive measures than those which live a facultative existence. In this connection, we have already become rather irrational in applying methods for the control of disease since our knowledge of bacteriology has not progressed far enough to give us the complete data about familiar pathogenic organisms. For instance—is it known with certainty how long *Mycobacterium johnei* can remain infective on pasture, or what is the significance of finding *Str. agalactiae* in sites extraneous to the udder? These are all im-

portant issues in the case of diseases for which there is no immunological method of prophylaxis.

Diagnosis.—It is not the purpose of the veterinary curriculum to train students for specialization in research work as their career. It is, nevertheless, its function to turn out graduates with a certain laboratory sense, especially in the ordinary methods used for the diagnosis of bacterial disease. It might be argued that they have already received this training in the pre-clinical year, but it is quite likely that a fair proportion will have forgotten these methods by the time of graduation. I would suggest that some practical laboratory training should be included in the course of preventive medicine and that experience in the methods used for the diagnosis of the more prevalent diseases of farm animals should be gained. For instance, the collection of samples of blood for the application of the agglutination test for contagious abortion in cattle and salmonella infection in poultry could be carried out, the collection of milk samples and the application of cultural tests for the diagnosis of mastitis, the recognition by microscopic tests of the causal bacteria in diseases such as anthrax, swine erysipelas and Johne's disease, and how to collect and submit specimens to laboratories for confirmatory diagnosis.

I would make a point here that when the Animal Health Division again recruits members into its ranks there may be an increasing need for men with a fair knowledge of the technique used in bacteriological methods. If the administration of the Milk (Special Designations) Order becomes its responsibility, then it is clear that a self-supporting laboratory service will have to be an integral part of that extension. The subject of animal health is definitely a veterinary matter and there is every justification for the profession giving advice on methods of clean milk production, repair and reconstruction of cowsheds and dairies, provision of water supplies and investigation of the origin of cases of infectious disease due to the consumption of milk.

The subject of diagnosis ought also to include the practical application of the tuberculin test in cattle, pigs and poultry. It would also be of interest to check up the results of the test by *post-mortem* examination, and instruction should be given in how to look for isolated lesions which might be responsible for a state of allergy. Even if, later, the student learns to his bitter disappointment that he is not allowed to interpret the results of the tuberculin test, that is no reason for not instructing him in a rational manner.

Control of Disease.—The principles applicable to the control of disease are so well known to you that I need only refer to them briefly and indicate in a general way the trend of our present-day methods. Each disease of bacterial origin is, however, treated by one or other of three main methods and the student should clearly understand the underlying principles:—

(*a*) The stamping out method, which has achieved notable success in the case of extinct diseases like rinderpest, glanders and pleuro-pneumonia.

(*b*) The immunological method, which is widely applied and has achieved considerable success in the control of sheep diseases in this country.

(*c*) The method of segregating diseased animals from healthy stock, supplemented by hygienic and therapeutic measures.

Those infectious diseases which are treated by the stamping out method or by the immunological method may be dealt with according to well-established methods which offer perhaps the most satisfying results. The interest in immunological studies could well be stimulated by reference to the pioneer work which preceded the development of several useful vaccines, such as Gaiger's work on braxy vaccine or the field trials carried out by Dalling on lamb dysentery vaccine.

But the Pasteurian principle of vaccination seems temporarily at least to have been fully explored and we are left with a group of diseases which are only susceptible to treatment by the third method, namely, that of segregation. It is for this reason that the ability to diagnose carriers of infection becomes so important and should be accompanied by a thorough knowledge of the pathogenicity and distribution of the causal organism. It is in this group of diseases, moreover, that an intimate knowledge of the correct husbandry of the animal in relation to disease control plays an all-important part. I need only illustrate this point by reference to a few diseases of bacterial origin which fall within this group: tuberculosis, Johne's disease, mastitis—staphylococcus, salmonella and coliform infections, and infections due to *C. pyogenes.*

In order to combat these diseases effectively, the student should receive practical instruction in the housing and milking of dairy cows, and the rearing of sheep, pigs and poultry; how to conduct a policy of segregation on an ordinary working farm and not only on those farms belonging to wealthy owners who may either run two farms or spend large sums of money on reconditioning premises. In recommending measures to farmers for the control of a particular disease it may frequently be necessary to depart from a single ideal system and it is imperative that the student should be thoroughly grounded in the essential features of the general maintenance of health on one particular farm so that he may then adapt these methods to suit the conditions he may subsequently encounter.

Need for a Field Station.—I regard the subject of preventive medicine as being of such a practical nature that it can only be taught on a farm where all classes of stock are kept. This farm need not necessarily be large but one of sufficient area to maintain a representative number of stock. A 300-acre farm should serve this purpose with a herd of 30 cows, a flock of 50 to 60 breeding ewes, a herd of 15 to 20 breeding sows and younger stock, three or four brood mares and 200 adult poultry. The buildings should not be elaborate and should never be regarded as permanent fixtures which cannot be renovated or adapted to suit current views on building construction. In this connection there is no reason why the Department of Hygiene should not be directly responsible for the design of the buildings and when necessary make recommendations regarding their alteration. There is a sad lack of progressive experimentation in this direction by our profession and in the future we shall have to play a greater part in advising farmers on the design of farm buildings. Such experiments would be of immense value in the instruction of students, thereby affording them first-hand information on the relative merits of various constructional plans and materials.

In so far as the maintenance of the animals is concerned, opportunities would be presented to the student to gain practical experience in feeding and general husbandry with a view to maintaining a healthy stock. I would suggest that a complete health record of each animal on the farm be kept with details of such tests as the tuberculin test, agglutination tests and data on the occurrence of any abnormal condition reported. In this way, a continuous record of the history of the stock would be available for analysis and discussion by successive classes of students which would stimulate a personal interest in the results achieved.

One further word—since the subject of preventive medicine on the farm embraces activities within the whole farming enterprise including crop husbandry and pasture management, I would suggest that the division of preventive medicine be made solely responsible for the general management of this field station.

To summarize my views:—

(1) Bacteriology as a subject in the curriculum should be regarded as a basic science and should be allowed to develop its teaching in the same way as other biological sciences.

(2) Bacteriology should be regarded as the pivotal science with its applied field in preventive medicine.

(3) The subject of preventive medicine should be taught as a separate subject from clinical medicine and the teacher should possess wide field and laboratory experience.

(4) Since immunological methods do not offer a solution to many of the major infections of farm animals, emphasis should be placed on the combination of diagnostic methods and segregation, supplemented by correct husbandry and hygiene.

(5) It is therefore necessary to instruct the student in diagnostic methods during the course of preventive medicine and to acquaint him intimately with at least one system of farm management which aims at the control of disease. The logical place to receive such instruction is at a farm or so-called field station the management of which is directly under the control of the teacher of preventive medicine.

General Discussion

Mr. C. W. Ottaway remarked that it was obvious that subjects could not be correlated by teaching all in the same year. A certain amount of parallel study was possible and desirable, particularly with the basic subjects; but in general, linking one subject with another meant isolating it from other possible partners. Subjects must be planned to integrate even though they be separated in years of study. He suggested two lines of general procedure: first, when arranging the syllabus of a pre-clinical subject consideration should be given to the particular clinical subjects for which it was taught; and secondly, the introduction of applied or revision classes of pre-clinical subjects at some stage in the clinical course. Professor Formston had complained of the necessity of having to remind students of their earlier training in anatomy; but students were bound to forget and must be reminded. With the added knowledge they had acquired since first they were introduced to some anatomical structure however, they could be reminded of facts from a different angle as they would then be better equipped to appreciate the true significance.

Speaking particularly for anatomy, Mr. Ottaway said he noted anatomy did not appear on the agenda as such. He had no complaint to make on this score as anatomy was so closely linked with physiology, both could be considered together in their re-

lation to clinical subjects. In fact if anatomy were not taught on a functional basis it would fall to the ground.

There were, however, structural aspects of anatomy which did not necessarily have the same application as physiology. In that connection he would like to see: more dissection of fresh specimens in the Dissection Room (this would give a better appreciation of the normal appearance and texture of tissues); abattoir classes in anatomy, which would be of great value to the appreciation of meat inspection in general and the study of the lymphatics in particular; less emphasis on systematic details and the dissection of minutiae, which only overtaxed the memory, and more on regional anatomy; surface anatomy on living subjects—of great value to surgery and common sense; emphasis on sites of surgical incisions and on anatomical reasons for their choice; emphasis on systems as routes for the spread of disease and as natural barriers to such spread; explanation of the autonomic system for a greater appreciation of pharmacological actions. These were only a few examples of the possible association of anatomy with clinical subjects. He was a firm advocate of a clinical course in anatomy. A great drawback to the introduction of applied courses in pre-clinical subjects was the paucity of suitable text-books. In conclusion, he would like to say—isn't it about time we standardized nomenclature?

Mr. A. Brownlee thought that it would be a step towards lightening the curriculum if the student were given a definite centre round which to group the various subjects and that such a centre should be the *organism*—the living individual. Then the subjects were: embryology, the study of the development of the organism; anatomy, the study of its structure; physiology, the study of the function of its parts; psychology, the study of its behaviour as a whole; ecology, the study of what it requires from its environment; parasitology and epizootiology, the study of other organisms that may live on or in it, draw nourishment from it or otherwise injure it; toxicology, the study of substances poisonous to it; pathology, the study of its response to injury; and medicine and surgery, the study of the aids given by man to the normal organism to enable it to maintain normality and to the injured organism to enable it to regain normality.

Regarding the question of acquiring knowledge of the normal farm animal, the speaker's own observations on the ruminating habits of cattle, to take an example, convinced him that an intimate study of the normal animal constituted quite a formidable task for the student.

Dr. E. L. Taylor said that he had no experience of teaching; his only connection with the veterinary course and with students had been through his position as external examiner in parasitology. He agreed with a remark of Professor Formston that teachers who are specialists tend to produce students who have the specialist's kind of knowledge of the subject, but thought that it was not an essential attribute of a specialist's teaching. The tendency showed itself very clearly in the examination of students in his own subject, when many of the better students were found to have a truly remarkable knowledge of the detailed morphology of a large number of parasites but to have failed to acquire an understanding of the association of parasites with animal disease. He thought that much of that detail, which could so easily be referred to in any text-book on parasitology, should be omitted in order to allow for more time to be given to those aspects of the subject which dealt with the association of parasites with disease. The handling of living parasites would provide a stimulus to increased interest.

Dr. Taylor went on to say that many of the speakers had wished to see the development of additional branches of the teaching of various subjects but he thought that Dr. Levi had touched on a very important point when he said that it was up to the teacher to prune out as much of the unimportant detail from his subject as could possibly be done. In his view, the association of pre-clinical and post-clinical teaching in his own subject, as in several others, could be considerably improved by entrusting it to the specialists in the various subjects. By allowing each teacher to see his own subject through from beginning to end he thought an automatic tendency would come into play whereby the points of practical importance would receive proper emphasis all the way through the course; and, furthermore, that the gaps which at present occurred, such as in the proper use of parasiticidal drugs, the application of the best aids to diagnosis, or the pathology of parasitic disease, in so far as his own subject was concerned, would be properly filled in. He agreed with Dr. Phillipson that much benefit might accrue from special lectures in the final year given by pre-clinical teachers, but in the teaching of parasitology he thought that it might be even better to have the greater part of the final year subject taught by veterinary parasitologists.

Dr. W. R. Wooldridge said that some had expressed fears that the establishment of independent veterinary research centres would have a detrimental effect upon the teaching centres. With this view he could not agree. The contribution of research stations to science and to the development of scientific personnel was clearly indicated by their history since 1918. Many such research stations concerned with numerous industries had been established and had greatly facilitated the development of many branches of chemistry, physics and biology. Concurrently a great increase in highly trained scientific personnel had become available, from which universities and other centres of learning had recruited many members of their scientific staffs.

This would be one of the results of the independent research stations being established for work upon animal health and he foresaw the day when the staffs of the veterinary schools would be enriched from these centres.

But with regard to the real matter under discussion that day, namely, the correlation of pre-clinical and clinical training, we must remember that this correlation was not made in the council chamber or other places where the curriculum was discussed. It must be made in the mind of the student. This fact forced us to acknowledge that the teacher must learn more of the student's mind, a consummation only possible if classes were small and if the tutorial system became more developed. Furthermore, teachers should encourage their better students to express themselves clearly on such matters, preferably in the presence of all the teachers concerned. A round-table talk between staff and student representatives could indeed achieve much. The day when the only function of the student in education was to scribble lecture notes and learn them parrot fashion was long past. The era of mutual understanding and help between teacher and student was at hand and he personally would welcome its greater impact upon our veterinary schools.

Professor J. G. O'Sullivan remarked that pre-clinical and clinical teaching had been discussed at length but to his mind the meeting had not gone far enough. As a teacher of biology he was naturally in it as a pre-clinical subject. One speaker had used the phrase "pre-veterinary subjects" and this he took to include biology because, as it was argued, the rightful place for biology was in the school. As an M.R.C.V.S. he submitted that the teaching of biology by a veterinary surgeon was of very great importance in the curriculum of the veterinary student.

Some of the important aspects of biology which he would mention were:—

1. The botany of the farm crops and feeding-stuffs.
2. Plants, poisonous or injurious to livestock; and dairy and meat products.
3. Introduction to bacteria and fungi.
4. Pathogenic protozoa.
5. Parasitic helminths and arthropods.

Opinion was divided as to whether biology should be part of our curriculum or not, but the speaker maintained that we would lose many advantages if it was entirely divorced from veterinary teaching.

The President (Professor J. G. Wright) said he was sure that members would feel, as he did, most gratified at the success of this the first discussion of the Society. Professor Mitchell had suggested that he (the President) might say something regarding field stations. After five years' experience his outstanding impression was that for a field station to attract an adequate amount and variety of clinical material for the efficient teaching of students, it must provide an expert and willing service. It must be staffed by men with a wide practical experience of and an advanced technical knowledge of animal husbandry and dietetics, clinical and preventive medicine, surgery, obstetrics and diseases of reproduction, as they relate to farm animals. Practitioners, and what was more important, their clients who must bear the cost, would not send animals to a field station unless they were satisfied that a highly expert service would be forthcoming. Especially important was it that this confidence should exist in the early days of development. Later, as the good reputation of the station grew and widened, anxiety as to material would ease. The acquisition of broad acres and splendid buildings would not alone make a successful field station.

For the teaching of animal husbandry and routine matters of medicine and surgery, he preferred the attachment to the station of four or five farms representing a cross-section of farming methods rather than a single large farm as an integral part of the station. He found the suggestion that the Veterinary Investigation Service in the area adjacent to the field station should be carried out by the staff of the station, a most attractive one, for by it material for the teaching of epizootiology and preventive medicine, particularly as these related to pigs, sheep and poultry, would be increased. Moreover, by it fields of research for the staff and postgraduate scholars would be opened up. There was one aspect of the matter, however, which should be mentioned

and about which he should speak frankly. By such a service there would, he thought, if the matter were viewed narrowly, be a tendency for the school to trespass on practitioners' interests. It was very difficult, and he thought undesirable, for a teacher, surrounded by students eager to learn as much as they could, rigidly to confine his attention to the individual problem he was investigating under the service. When other cases of great teaching value were present it was only natural and proper that he should wish to examine and discuss them with his students. He would say with confidence—if both school and practitioner approached the problem in a spirit of collaboration and mutual confidence, good only would come from it; the benefits which arose would be by no means one-sided but mutual and the general reputation of the profession advanced thereby.

How long should students spend at the field station? He had come to the conclusion that the optimum time was three terms, but not necessarily three consecutive terms. While it was their duty to provide the most comprehensive education possible from the technical viewpoint, it was also important that that education should provide those cultural features expected of a professional training and for the latter purpose nothing was better than the general university environment—the rubbing of shoulders with students pursuing other branches of learning. Furthermore, there were still many practical aspects of our work which could only be properly dealt with in the city. He said these things not out of disregard for field stations—he was one of their strongest supporters—but to check any tendency there might be for the pendulum to swing too far in the opposite direction from that which had prevailed in the past.

During the discussion the examination system had been taken to task. He agreed, there was room for improvement. It had rightly been stressed that they must teach their students to think rather than to memorize masses of factual detail. Examinations should be so arranged that each subject merged almost insensibly into the next. The respective years of study must not be taught as watertight compartments, the sole purpose of each being the passing of the appropriate examination. They all recognized examinations as an evil but he was compelled to say he still regarded them as a necessary one. Love of learning was not yet so strongly developed in the average man and woman that tests of knowledge could be dispensed with. They were still the most important stimulus to work.

Their discussion that day had revolved chiefly around collaboration between the pre-clinical and clinical teachers and it was agreed that for courses of instruction to attain full fruition such collaboration was essential. But they must put their preaching into practice. Those of them on the clinical side must welcome their pre-clinical colleagues into their clinics and they must make their cases available to them for study; conversely, the pre-clinical men must be prepared to discuss their problems with the clinicians and help them. Unfortunately the will to unselfish collaboration was not possessed in equal measure by all and he believed it to be important when appointing men to our schools to require that they shall demonstrate their ability to live and collaborate amicably with their colleagues in addition to academic attainment.

PROPOSED NATIONAL COLLEGE OF FOOD TECHNOLOGY

When the Institute of Meat was formed in August last year, its primary object was the promotion of education, both technical and general, among members of the meat and allied trades. The first major step to implement this was taken recently when representatives of the Ministry of Education and of the meat and associated industries met to consider the formation of a National College of Food Technology. As a result, states the *Meat Trades Journal*, a college—which will probably cover all the food trades—will be sponsored by the Board of Education and governed by a committee from the trades concerned. The Ministry will now invite the other food industries to co-operate.

"This is real progress," comments the *Journal*; "it means not only the provision of advanced work for those who have gained their diploma, postgraduate research, the training of suitable teachers for technical schools, a cultural development on a quasi-university standard; it will also provide something which will serve the purpose of a staff college for the future leaders of the trade and the creation for the more distant future of groups of people representative of all the food industries who having met in the formative years, and studied under the same regime, will have a familiar formula for approaching parallel difficulties and even conflicting ones. Furthermore, as was pointed out, the cost to the organizations which will benefit so much, might almost be described as negligible."

THE VETERINARY RECORD

October 18, 1947

EDUCATION

At the commencement of this issue we publish the proceedings of the first general meeting of the most recently formed division of the Association, that of Veterinary Teachers and Research Workers. The subject of discussion was the correlation of the pre-clinical and clinical teaching and its burden that undergraduate study must comprise a smooth and logical change rather than a series of isolated and disconnected subjects the main purpose of which is the passing of a sequence of appropriate examinations. With this view there must be agreement. The primary aim of our schools must be to produce thinkers and teaching throughout should have as its essential object the thorough grounding of students in the fundamental principles and methods of our science, thus giving them a rock on which to build in their subsequent professional life. It is not to be expected that the colleges shall turn out complete practitioners. To suggest that they do so during the five-year period of transition from schoolboy to qualified man is ridiculous. What is required is that they shall know health and how to maintain it in animals and that they shall be sufficiently familiar with disease to be able subsequently to recognize it, investigate it and to combat it rationally.

The real practical education is only begun at college and develops fully after graduation. The schools must ensure that the new graduate is able clearly to differentiate fact from fiction, that he has the urge to find things out for himself and that he is able to draw accurate deductions from those findings. He must learn how to apply his basic scientific knowledge. Not a little of a man's professional progress is dependent on his contacts during the early formative years. Unfortunately this is generally a matter of chance, but there can be no doubt that it is a few years' association with a sound and experienced practitioner which is the seal to the young man's education. There is a tendency for young men wishing to take up teaching and research to enter these services direct from college, without undergoing that period as a journeyman in the field. There are many reasons for this to which it is not proposed to refer at the moment: suffice it to say that the practice should be discouraged.

A preliminary apprenticeship in the field is essential to the teacher and research worker, for by it he obtains a picture of the animal disease problem as a whole and is thereby able to see his own particular specialization in the right perspective.

From time to time our course has undergone revision, generally in the direction of additions to the syllabus. We must ensure that such addition is compensated by pruning of the dead wood. The student of to-day has to carry a very heavy load and every effort should be made to lighten it by elimination of that which is redundant or rightly belongs to the province of the specialist. In this connection our examiners have a task of high responsibility for under the present system of external examination it is inevitable that teaching shall in considerable measure conform to examination requirements. It is their paramount duty to see that the student has learned to reason rather than memorize, to discuss rather than dogmatize. The anatomist and the physiologist must ensure that the student has an understanding of the structure and function of the

animal organism; the pathologist, that he understands the deviations from normality which result from disease and malnutrition, and the clinician, that he is able to correlate clinical signs and laboratory findings with lesions and thus apply rational methods of combat.

But a mere technical training does not adequately equip the professional man to occupy his rightful place in the life of the nation. He needs something much more comprehensive; something which cannot be acquired in the lecture room but which is the outcome of his general reading and of his contacts with men and affairs. There can be no better medium for such mental development than the general unversity environment; the rubbing of shoulders and the discussion of problems with students preparing themselves for other professions. In this connection we question the wisdom of the present trend in the public and secondary schools whereby boys, after obtaining their school certificate at the age of 16, or thereabouts, confine their studies for the Higher School Certificate to the subjects of chemistry, physics and biology, with the chief object of gaining exemptions from their first year of professional study, since from the age of 16 their education tends to become rigidly canalized. We feel that the entrants to our schools would be better equipped if their sixth form education were broader and more humanistic and we would suggest, as an improvement, one only of the sciences, one of the English group of subjects and a modern language. Many of us of the older generation deplore our weakness of expression, both of the spoken and written word. and lament also our inability to utilize original foreign literature. Our impression is that the present generation of students are not better equipped in these connections than were their forebears.

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THE VETERINARY EDUCATIONAL TRUST

THE large attendance at the luncheon of the Veterinary Educational Trust reported elsewhere in this issue, is a clear indication of the great interest taken in its work by all sections of the livestock industry. The first full Report of the Trust presented at the Annual Meeting of the Council and Trustees, also is reviewed in our columns. This is a most comprehensive document, not only giving details of progress to date, but explaining future policy, especially that connected with the formation of an "Animal Health Fund." The development and application of this fund materially widens the scope of the Trust's activities, from those of scholarships and research, and plans are prepared for the formation of a chain of research stations for farm livestock, and the development of Veterinary Hospitals. The greatly enlarged programme is, indeed, the logical outcome of sound foundation work.

The comments made by representatives of the Royal Agricultural Society of England, the National Farmers' Union, the R.C.V.S. and the N.V.M.A. make it clear that these new plans are completely in accord with modern agricultural and veterinary thought. The hospitalization of animals is a project which has been before the Association for many years and is one which is necessarily fraught with difficulties. However, the suggested management of such hospitals by a veterinary organization depending entirely upon the support of local practitioners is calculated to overcome the difficulties associated with other methods. This scheme (once unqualified practice is under the control of the R.C.V.S.) must offer great opportunities for the training of lay veterinary workers, and possibly new graduates and thus help to meet a long-felt want. If laboratory facilities are developed with the hospital scheme, great assistance can be rendered to the clinicians within the area served.

The deliberations of the Committee of the N.V.M.A. considering the profession's contribution to the national crisis make it abundantly clear that a great expansion of research and a more rapid application of its results in the field by the training of specialist workers, is essential for the progress of our science, and we appreciate the great efforts of the Trust in this direction.

Naturally the success of the new programme is dependent upon the response of the public to the appeal of the Trust. In this matter there is no doubt that members of the profession can do much to help. We look forward with confidence to the rapid fruition of the plans outlined.

TREATMENT OF MASTITIS BY INTRAMAMMARY INJECTIONS

Mr. T. J. Coyle, M.R.C.V.S., of Pukekohe, New Zealand, writes: As it is becoming the general practice to treat mastitis by intramammary injections under positive pressure, I consider it is high time that the use of teat siphons was totally discontinued as being unnecessary, and, as nearly everyone agrees, they are undesirable. It has been found quite simple to force sulphanilamide in oil 35 per cent. and of heavy consistency through the teat sphincter using a nozzle up to five or more millimetres, simply by holding the teat orifice squarely over the lumen of the nozzle and fairly tightly against its rim. If too large a nozzle is used, the large volume of emulsion ejected will force the teat away from the syringe, but any size up to 5 mm. (bore) may be used according to the density of the solution employed. The standard human ear nozzle with a rounded end and a right angle bend with a bore of about 2 mm. is very satisfactory, but in some cows with large teat orifices, it tends to penetrate the orifice. It is, however, very satisfactory for heifers or cows with narrow orifices.

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POPULARIZING THE WORKING HORSE

In the September issue of its *News Sheet* the National Horse Association of Great Britain records that an informal meeting recently took place between representatives of the National Horse Association and the National Federation of Saddlers and Leather Goods Retailers, when the Federation's scheme for a campaign to re-popularize the horse in the agricultural and commercial fields was discussed. Mr. Barber, the Secretary, stated that while his Federation considered that the Association had performed excellent work in encouraging the riding and pleasure horse, they felt as saddlers, dependent mainly on commercial work, that the utility and farming horse had not received quite the same measure of encouragement. The Federation fully approved of the Association's recent booklets on the commercial and agricultural horse, but hoped that the Association, when re-constituted as the newly formed Horse Society, would bear in mind that the trade as a whole hoped and expected that a fair proportion of their activities would be directed to encourage the breeding and use of the farm horse and the commercial horse, both heavy and light.

It was agreed that anything which might result in the horse retaining and increasing his rightful place in the life of the community should be encouraged. At the same time, there were some difficulties in launching a scheme as envisaged by the Saddlers' Federation, and the support of all directly and indirectly interested would be essential for any measure of success. It was therefore agreed to call a meeting during the next few months of those organizations and societies which might be interested, with the following items on the agenda:—

1. To consider methods to encourage the greater use of the horse for agriculture and transport.
2. To discuss publicity methods of bringing the commercial and farm horse before the public eye.

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SEAWEED AS FODDER

The Secretary for Scotland, Mr. Joseph Wedgwood, said that seaweed might provide a feeding-stuff for sheep, pigs and poultry, when he opened the Government-sponsored Institute of Seaweed Research at Musselburgh, Midlothian. It is believed to be the Empire's first research station of its kind. and Mr. Westwood gave an assurance that further stations would be established in other parts of Scotland.

XUM

CLINICAL COMMUNICATIONS

Complete Recovery in Cases in which the Prognosis had been Declared "Hopeless" in Veterinary Practice

By

NASHED HELMY BASTAWY, M.V.SC.

Lecturer in Veterinary Surgery, Faculty of Veterinary Medicine, Fouad I University, Cairo, Egypt

Well over a century ago, one of the greatest British veterinary authors of all time, William Percivall (*Hippopathology*), in a remarkable passage delineating the services which the veterinary surgeon could render towards his clients in practice, declared that his real utility lay, above all, in the matter of *prognosis*. Those were, of course, the days when veterinary practice meant almost entirely horse practice. Percivall had in mind that where the experience and judgment of the skilled veterinarian counted most was in the economic matter of giving a trustworthy forecast in a given case as to whether, on the one hand, it was worth while for a particular owner to retain a sick or lame horse under treatment after taking into account the severity of the ailment and the likely period during which the horse need be kept before it was again judged fit for work, or whether, on the other hand, it would be better for him in his own interest at once to dispose of the animal. It need hardly be said that it was pre-eminently in measure as the veterinary surgeon of that time gained a reputation for reliability in that respect that he succeeded in his practice. This came to be so pronounced that the designation of the special calling of *veterinarian* (for this was the name assigned to it when Percivall with the aid of his father started the periodical bearing that same name which, in later association with Youatt, was destined to become the forum of the rising profession in Britain), in popularly abbreviated form (*vet.*) soon gained common currency in the English language as a synonym generally applied to a similar careful examination conducted by someone at the behest of an actual or prospective owner with the object of forecasting future probabilities for what was already in, or for what he had a desire to come into, his possession. This feature of what the public conceived to be the veterinarian's ordinary vocation has had no exact parallel in human medical practice. Hence it is a tantalizing experience to find how nearly completely impossible it is to get a human physician of even high standing to comprehend what is the veterinary surgeon's professional objective in daily practice. Disposal of the patient, when the economic forecast so warrants it, by sale—to a purchaser for some other purpose while alive or for slaughter as food—or by euthanasia, does not enter into the reckoning of the human practitioner. It has, therefore, been with justice most vigorously contended by the veterinary historian that no greater harm has ever been done to the training of the veterinarian in the various veterinary schools of the world than when it has been foolishly imagined that that training can be conducted on lines strictly parallel with those deemed appropriate at the moment in the current training given to the entrant into human medicine.

In spite of what may be a long experience, however, the veterinary surgeon feels bound to confess it is not seldom that the outcome in cases in which he has given a sure prognosis has sometimes shaken his confidence in himself very considerably.

Extreme examples are those which the veterinary surgeon has confidently decided are utterly beyond recovery and so has advised destruction, yet some chance circumstance has interfered with the execution of this decision and afterwards to his astonishment the "hopeless" case takes a turn for the better and eventually makes a complete recovery. Of many cases of this kind which have come to my notice during nearly 14 years' experience, the following five are given as examples:—

I. Distemper: Two Dogs Recovering After Prognosticated Fatal Attacks of Distemper

Case No. 1. Greyhound pup, four months old, showing severe pulmonary, intestinal and skin forms of distemper, temperature 106° F. The salivary and nasal secretions were so profuse as to form a mixed continuous thick stringy discharge hanging down from the mouth. The eyes were completely occluded, with advanced purulent conjunctivitis. Everywhere the room was soiled with the blood-stained diarrhoea. The animal was in great pain and in a state of such extreme exhaustion that I insisted that it should be destroyed at once. However, for strong reasons of personal attachment, the lady owner declined and expressed the wish that however remote were the chances of recovery, it should be treated; and so the usual kinds of medicines were given to allay the symptoms. Most unexpectedly, after four days, the animal began to improve, the temperature fell, the diarrhoea was checked, the dribbling of saliva and nasal discharge stopped and the conjunctivitis abated. The animal also began to lap milk of its own accord. This phenomenal improvement induced me to pursue treatment more vigorously, and, within 15 days, the animal had so far recovered that it entered into convalescence. After two weeks it was returned to the owner looking as if nothing had happened to it.

Case No. 2. Alsatian bitch, 18 months old, showing a very advanced pulmonary form of distemper with advanced purulent conjunctivitis, marked rhinitis, and soreness of the skin around the mouth. The animal was so badly exhausted, panting in breath asd nearly comatose that it was believed not to have any chance of living. Therefore I advised that the bitch should be destroyed. The owner, however, begged that destruction should be postponed for another day pending the return of his wife to have a last glance at the animal. Treatment was therefore undertaken in the meantime. The owner, however, did not come the next day as promised. Meanwhile, gradually, the extreme symptoms began to abate, so that within 18 days the animal showed no fever or outward clinical symptoms, entered into convalescence, and then recovered uneventfully.

II. Recovery After Complex Comminuted Fracture in a Dog

Cross-bred dog of medium size, three years old, run over by a cart, causing compound, complex, comminuted fracture of the bones, metacarpals and metatarsals, of all four legs. The fractured and splintered bones were projecting out of the skin wounds and there was much damage to the skin and underlying tissues. The dog was in great pain and was considered to be beyond treatment and so destruction was advised. The owner, however, begged me to keep the dog for a few days longer until his son, who was deeply attached to the dog, returned to Cairo. Dressings and splints were therefore applied and enemata administered daily. It was most remarkable afterwards to notice healing take place rapidly; so that, within a week, the wounds showed a clean, healthy appearance, the bones were restored to their normal positions, and callus formation started to take place most promisingly. Within a month there were no signs of wounds or fractures, the animal could stand easily and in two months it was moving about again freely and in good spirits.

III. Fracture of the Humerus in a Pregnant Mare

Bay Arab mare, five years old, nine months in-foal, used for drawing a small private carriage; hit by a motor car in the shoulder, causing compound complex comminuted fracture of the lower third of the humerus. The skin and underlying tissue wound was very large and gaping, running in a transverse and somewhat oblique direction from the pectoral region to within a short distance of the ribs behind the elbow. The lips of the wound were so far apart and so badly lacerated that complete stitching of them together was out of the question. There was much damage done to, and extensive swelling of, the whole limb. As cases of fracture in a horse, of whatever kind, are usually regarded as hopeless from the point of view of prognosis, and especially as this particular case was threatened with early abortion, there seemed hardly any likelihood of a successful outcome. However, in the very remote eventuality of her delivering a healthy foal, she was kept alive and put in slings and treatment begun immediately. No appreciable improvement was observed for three weeks. The wound then began to heal very slowly and the discharges of medullary and other matter from the bones and from the deeper parts of the wound began to diminish. It was fortunate, as it happened, that the elbow and shoulder joints escaped injury. Then one night, when the mare had reached full term, she delivered a fine foal in excellent condition. The delivery took place without trouble and the foal started sucking its mother at once in the normal way. The mother continued in the slings for about four months from the time of admission, when the wound was almost healed and callus formation had taken place. She was then taken out of the slings and allowed to exercise for just five minutes morning and afternoon. She remained under observation for another three months, when she improved a good deal and could walk easily. She was then returned to her owner with her foal, and he was advised to keep her for breeding purposes only. My surprise may be imagined when, eight months later, the owner drove to my premises in a trap drawn by the mare which was in excellent condition and looking as if nothing had happened to her.

IV. Paraplegia in a Horse Followed by Recovery

Thoroughbred horse, three years old, showing symptoms of such advanced paraplegia of the hind limbs that it was quite unable to walk. The cause of the paraplegia was not determined exactly,

but it was reported to be injury caused during disembarkation at Alexandria on arrival from England in 1937. The horse was brought to the Veterinary School and put in slings. No treatment was carried out beyond the usual nursing and medical attention. The case at the outset was really regarded as a completely hopeless one, but as the subject was a most valuable horse it was considered just worth while to wait upon events, however unpromising. To my astonishment, one morning, two weeks after admission, when the animal was released from slings, it was found that it could stand without help. Shortly afterwards, the horse was walked out of its box without trouble. After two months from the date of admission it was delivered back to its owner for training for a racing career. Afterwards it acquitted itself so creditably on the turf that it gained a considerable reputation in Cairo racing circles.

Considerations of space forbid submission of other examples of this kind. Reflection upon them must certainly provide the veterinary practitioner with much cause for salutary thought. In the matter of prognosis, an opinion must necessarily be given to the owner with confidence, and always, to be sure, with great care in its formulation, after taking the utmost care in diagnosis and then taking into account both what is recorded as relevant in the veterinary literature as well as what can be drawn from the veterinarian's own personal experience. It may be well for him, however, in most cases, for his own peace of mind at a later date, to restrain himself from presenting an air of overconfidence.

Acknowledgments.—Cases I (No. 2), III and IV are taken from the records of the Faculty of Veterinary Medicine.

Assistance in writing this communication was given by J. T. Edwards, Visiting Professor and Temporary Dean of the Faculty.

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A Lost Eye

HAMILTON KIRK, M.R.C.V.S.

London

At the stadium which I attend, it is the custom at the end of each race to throw a rubber "hare" on to the track in order to facilitate the catching of the greyhounds.

On a recent occasion a certain dog went for this decoy and was noticed to sit immobile upon it as though to dare any other dog to approach. But, in reality, the dog was dazed and injured, for upon its being brought into the paddock I was at once told by several trainers that the dog had had its left eye knocked completely out.

Upon close examination the orbit was found to be quite empty, the membrana nictitans lying over the floor of the cavity. My thumb was easily accommodated in the orbital fossa and no trace of an eyeball could be felt. Yet—although men had been sent on the track to search for the eye—I could not believe the eyeball had been lost, especially in the absence of haemorrhage.

With forceps, the membrana was lifted, and about one-eighth of an inch of the cornea could just be seen among the post-orbital fat. The treatment consisted at first of warm fomentations, but later a 0·1 per cent. solution of adrenalin was instilled. In 36 hours the eyeball began to come forward, and in two days it was back in normal position. Obviously the eyeball had been knocked right back into the fat, an occurrence which I had never previously encountered in 35 years.

It was fully expected that there would be much pain, loss of appetite, keratitis, and possibly blindness, but none of these things occurred. The sclerotic was moderately bloodshot, and the dog was passed for racing at the next meeting.

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stomach tube. The pictures showed a complete stoppage of the meal in the stomach until death occurred and indicated an acute spasm of the pyloric sphincter. A variety of drugs was used, some acting centrally and others locally, and their effects were studied with the aid of X-ray photographs. It was found that castor oil was the only treatment which showed some relaxation of the pylorus and this occurred only in a small proportion of treated cases. The author recommends the slaughter of the affected animals which have not responded to this treatment within a day or two.

B. W.

ABSTRACTS

[Bacterial Protein in the Treatment of Nervous Symptoms in Distemper. Robin, V., & Laurent, M. (1947.) *Rec. Méd. Vét.* **123**. 97.]

The authors state that in the Paris region distemper has for some years presented a different clinical picture than formerly. Respiratory symptoms have become rare, but involvement of the alimentary tract, and especially nervous symptoms, have become much more frequent. Preliminary symptoms often take the form of rhythmic myoclonic disturbances usually localized to a group of muscles. The change of symptoms to those mainly of a nervous disorder, led the authors to modify their usual course of treatment.

They give a brief review of the successful use of bacterial protein in the treatment of nervous disease, *e.g.*, killed cultures of staphylococci and *B. prodigiosus* (Vaccincurin) as used by Dolliken in 1919. The preparation used by the present writers (Staprolysat) of which details are not given, is presumably of a similar nature. The intravenous route is used, and the injection is followed by a brief period of elevated temperature, restlessness and vomiting. They claim 20 complete cures and seven improvements in a total of 37 early cases exhibiting myoclonic symptoms. Auxiliary treatment consists of the administration of hexamethylenetetramine, sulpharsenol, sodium iodide, vitamin B and strychnine as occasion seems to demand.

J. G. C.

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[Observations on the Aetiology of Lymphomatosis: I, II and III. Asplin, F. D. *J. comp. Path.* **57**. 116-134.]

I.—Previous work by Blakemore has shown that a virus is present in many cases of lymphomatosis of fowls which is capable of causing a disease in young chicks (six weeks or younger), characterized by acute focal lesions in the liver and heart.

In successfully inoculated chicks, the lesions appeared within three to four days of infection and were most conspicuous about the second week, after which they regressed and often disappeared by the 30th day. The mortality rate was low. Only rarely does an increase in virulence occur through passage.

Infected chicks harboured the virus for several months in the liver, heart and spleen, and it was also detected in the faeces.

The disease was transmissible by pen contact and via the egg contents, but not mechanically on the shell and could be successfully treated with certain sulphonamides, notably sulphadiazine. The curative effect of the sulphonamides was inhibited by *p*-aminobenzoic acid. The virus could not be demonstrated in the tissues of ducklings, rabbits, guinea-pigs or mice 16 days after injection.

II.—"Chick disease" virus was demonstrated in 38·8 per cent. of fowls affected with lymphomatosis. The virus could not be demonstrated in lymphomatous fowls previously dosed with sulphadiazine (0·5 gramme per day for ten days). The virus was also found to be present in 4·9 per cent. of non-lymphomatous fowls. A neutralizing antibody was present in the sera of all fowls whose tissues were positive to the chick inoculation test. It was also present in six out of 30 lymphomatous fowls negative to the chick test.

It is suggested that "chick disease" is caused by a virus of low pathogenicity which is widely distributed in poultry, and which may not be the cause of lymphomatosis.

On the other hand, it appears possible that fowls affected with lymphomatosis may present an especially suitable environment for the multiplication of the "chick disease" virus.

III.—In this paper detailed evidence is presented which suggests that lymphomatosis may occur in fowls not infected with the "chick disease" virus. Both artificially and naturally infected lymphomatous fowls were not susceptible to treatment with sulphadiazine which, incidentally, significantly checked the rate of growth.

J. G. C.

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[Pyloric Spasm in Rabbits. (Trans. title.) Klarenbeek, A. (1947.) *Tijdschr. Diergeneesk.* **72**. 1-10.]

The condition described affects chiefly young rabbits although some cases are recorded as occurring in fully grown animals. It is characterized by a very sudden anorexia, acute tympany and marked reduction in defaecation. Peristaltic sounds are almost completely absent for long periods and death usually follows within three days. The disease was studied by means of X-ray pictures taken after the administration of barium meals introduced by

(*Concluded at foot of previous column*)

The Veterinary Educational Trust

Animal Health Fund Established

PROJECTED LINKED RESEARCH STATION-COUNTY HOSPITAL-PRACTITIONER SERVICE

The Veterinary Educational Trust, having firmly "found its feet," is now moving steadily forward towards the achievement of the aims implicit in its synonym, "The National Fund for Animal Health." During the first three years of its existence work proceeded quietly on preparatory lines; the past year marked a definite stage in the history of the organization, inasmuch as with the cessation of hostilities it became possible to build on the foundations which had been laid. These developments, and the drawing up of impressive plans for the expansion of its work, are dealt with in the first complete report of the Trust which has just been published and which was submitted on Tuesday of last week to the Annual Meeting of the Trustees and Council. In it, Dr. W. R. Wooldridge, M.SC., M.R.C.V.S., Scientific Director and Chairman of Council, covers the activities of all the Committees and of the Equine Research Station at Newmarket, which now has its companion station for canine research, so that succeeding annual reports may provide a connected account of the work of the Trust as it develops. The essential nature of this development is indicated in the following passage from the introduction to the report: "Two considerations alone render it imperative that the Trust should tackle a greatly enlarged programme—(1) the incidence of animal diseases which cost the nation (and producers) not less than £50 million annually, and (2) the priority given to farm livestock in the Government's post-war agricultural policy." In this connection, too, effective quotation is made of the strictures on the present status of veterinary science in this country passed by the Select Committee on Estimates, reproduced on page 417 of our issue of August 23rd.

EDUCATIONAL OBJECTS

Since the beginning of the Trust 29 undergraduates have been awarded scholarships or studentships at the veterinary colleges. Unfortunately, owing to the overcrowding of the colleges and the large percentage of the student population who are ex-Servicemen, the scholarships for the complete course have had to be discontinued. These have been replaced by the award of studentships to undergraduates who have completed one or preferably more years of their course, have suffered some adverse change in financial circumstances, and have needed financial assistance to enable them to complete their studies. These studentships have been awarded in consultation with the authorities of the respective colleges, taking into account scholastic results each student has achieved in his previous years at college. The value of the initial scholarships varied from £100 to £200; the studentships normally vary from £30 to £100 p.a., according to individual financial circumstances. The total sum that has so far been expended on these scholarships and studentships is £7,320. In addition to these awards, 19 Evans Final Year Studentships, approximately £50 in value, have been awarded to the student who, in the opinion of the college authorities is considered to be the best student in the first four years of study at that college. The total numbers of scholarships or studentships awarded to students at the different colleges are as follows:—

London	20
Liverpool	12
Edinburgh	6
Dublin	6
Glasgow	4

Latterly, the Trust has decided to offer Research Training Scholarships to recent graduates who have done well in their veterinary studies and are anxious to take a further scientific course at some university in order to train themselves as research workers or teachers, and six of those have recently been awarded.

RESEARCH

One of the greatest needs at the present time is the institution of Research Fellowships designed to encourage individuals to undertake research within the veterinary field. Ten such Fellowships have already been awarded and here again, as also to the donors of grants for scholarships, the Council acknowledges its indebtedness to those individuals and firms whose generosity has made possible these awards, though some have been made from the general fund.

In a later section of the report a short—but impressive—account is given of the results obtained by these various research workers.

Independent Research Stations

Whilst some advances are being made under the auspices of the Agricultural Research Council in the almost unexplored field represented by the many fundamental problems underlying one or other aspect of veterinary science and practice, the Trust feels that the development of independent research stations carrying out work complementary to that of the State will materially assist the livestock industries of the country. "It has accordingly decided to establish a series of research stations in the belief that these stations will not only assist the application of science upon the farm, in the stable and in other places where animals are kept, but that they will also stimulate research in general and encourage youth to enter research careers with the consequent increase in the personnel available for teaching and specialist posts. The Trust believes that more specialization is desirable within the veterinary profession, and it hopes the research stations may be utilized in part to this end. The purchase of the estates necessary for these research stations is a heavy financial commitment, but the cost of running them as actively going concerns subsequently is no less vital and onerous. Estates for the Equine Research Station and the Canine Research Station have been secured at Newmarket, and negotiations are in progress to acquire an estate of approximately 1,000 acres with the option upon more, for the purpose of developing a group of research stations devoted to the study of problems connected with farm livestock. The purchase of an estate does not, however, establish in full activity a research station; it is then necessary to acquire staff, buildings, equipment and animals. Unfortunately, many difficulties beset the advancement of these objects at the present time, but despite these difficulties the Equine Research Station has made a start and it is to be expected that research there will probably increase in the next two or three years. Research at the Canine Station will begin within the coming year. Some account of work already accomplished at the Equine Research Station is given in a later section of this report. Work at the Canine Research Station will be concerned with nervous and dietetic troubles, including hysteria, the complications of distemper and the illnesses of the young."

Veterinary Clinical Services and Hospitalization

The research centres being established by the Trust hope to maintain liaison with the clinician in practice; it hopes also that the specialist services developed at the Stations will co-operate fully with the practising veterinarians. "Many believe that further extension of veterinary services is essential. Indeed, much interest has already been created within the ranks of veterinarians by recent discussions in regard to the desirability of creating a hospital service.

"So far the question of hospitalization has been discussed in the main from the angle of the needs of the urban domestic animal. The view of the Trust, however, is that the subject ought to be considered from the broad standpoint of the actual needs of the whole animal population. Two essential accompaniments of an efficient hospital service are a laboratory diagnosis service and the provision of facilities for the training and registration of veterinary nurses and technical assistants. This training on a sound basis will become possible as soon as Parliament enacts a Bill for the control of unqualified veterinary practice and when that takes place the Trust will play its part in promoting this training in full consultation with the Royal College of Veterinary Surgeons.

"The establishment of veterinary hospitals in every administrative county and in our cities and large towns would offer definite advantages to the busy practitioner and his animal health service, particularly when he is a member of the hospital staff. The fact that the practitioner could send a sick animal, when in his opinion necessary, to the nearest hospital for routine care and nursing subsequent to his initial diagnosis, would enable him to devote more time to his more skilled professional work. The facilities at the hospital would enable the practitioner to reduce his overhead costs, whilst the hospital would have its trained staff supervised by a resident veterinary surgeon on duty day and night. Sick animals would thus get that constant care which only such a service can render. The owner would be content with the knowledge that his sick animal is receiving constant skilled attention and he would apply to the hospital for news of its progress instead of troubling his veterinary surgeon. The practitioner, on the other hand, would continue to supervise the treatment of his patient in hospital, his visits and other professional attention being governed by the normal practitioner/client relationship. Animals of the poor would be accepted for treatment free at the hospitals upon the recommendation of a veterinary practitioner or other authority approved by the profession. The closest co-operation will be encouraged between the hospitals and all other bodies genuinely interested in the treatment of animals upon a proper

ethical basis, which alone allows the animal the best skilled service. The establishment throughout the country of local veterinary hospitals would greatly facilitate co-operation between the profession and animal welfare societies, and in so doing, would almost certainly provide a definite check to the further spread of the type of "clinic" which is conducted without skilled veterinary control.

"Veterinary students attending a hospital would derive great help from the opportunity given them of seeing the varying methods employed by practitioners in the handling of their cases and newly qualified surgeons who served for, say, six months at a local hospitals as house surgeons would get a highly instructive insight into general practice before deciding where to set up on their own.

"Every local hospital would have its link with one of the big training schools and the Research Stations, and would ultimately have available panels of specialists and consultants to whom practitioners could turn for advice and guidance when necessary. It would be a real help, too, to the practitioner to have trained help available, not merely for nursing his charges, but in preparing for operations and cleaning instruments, and to have experts available for X-ray work and electrical therapy.

"The diagnostic services provided by local hospitals and their laboratories would be of incalculable value to practitioners in their work and, generally, it can be said that the establishment of a country-wide hospital service would rank as a mile-stone in the progress of the profession in its task of promoting animal well-being.

"From the standpoint of the animal-owning public, the advantages are no less obvious. It would assure them of a better service and they would know that an animal admitted to hospital would receive skilled veterinary attention and continuous care at the hands of trained nurses under close veterinary supervision.

"We are not overlooking the fact that some dogs, for example, are better treated at home when they fall sick, but many, for obvious reasons, are better away from their owners. Even those who would really do better at home subject to their getting proper attention would be better off in hospital in the long run, because of the skilled supervision they would receive throughout the day and night.

"The provision of hospital care by individual veterinary surgeons, or by groups of surgeons, is almost prohibitively expensive to-day, and the difficulty of finding suitable accommodation and trained staff virtually rules out the possibility of any extension of the private hospital system—a system which, in any case, can never hope to render the 100 per cent. service which would be available at an efficiently organized local veterinary hospital.

"Bearing these considerations in mind and believing that a hospital and diagnostic service will prove of inestimable value to the veterinary profession and the animal owning community, the Trust has decided to organize such a service and finance it from its Animal Health Fund."

Accordingly, the Trust hopes to help with the advancement of the practice of clinical veterinary medicine and surgery by facilitating through postgraduate Fellowships the specialization of some members of the profession and the development of a hospital and laboratory diagnosis service in full co-operation with the practitioners throughout the country. "These hospitals will be linked with the Research Stations so that the specialist advice at the Stations can be called upon through the hospitals. The hospitals will be run to ensure that all animals entering there shall be under proper veterinary supervision and treatment. The aim will be to establish at least one hospital in every county, but in the first instance it will be aim of the Trust to facilitate the full development of hospitals attached to the old and the two projected veterinary schools at Cambridge and Bristol. The working of the hospitals will be organized on an ethical basis in consultation with the Council of the Royal College of Veterinary Surgeons, the National Veterinary Medical Association and the veterinary schools. The Hospital Service will start being developed during the next year and will grow according to the response of the public to the appeal for the Animal Health Fund."

Finance

In 1942 the Trust founders aimed at raising a capital sum of £1 million. "To-day it is very clear," states the report, "that that target must be multiplied at least five-fold, or that an assured annual income of at least £200,000 must be secured. It will be appreciated that the task before the Trust is a heavy one, but it is one which a virile, independent organization serving the public need can undertake with a reasonable prospect of success, the extent of which, however, will inevitably depend upon the support the Trust receives from the public and all those interested in the welfare of animals." This section concludes with an appeal for an even larger income, which would allow the slow building up of a capital sum which alone will ensure that stability of development which an educational and research body, such as the Trust, requires.

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The Development Scheme

R.C.V.S., N.V.M.A. and Agricultural Bodies Pledge Full Support

Following the Annual Meeting at which the report reviewed above was presented, a luncheon was held at the Café Royal, Regent Street, W.1, with the Duke of Norfolk, President of the Trust, in the chair.

The large company included Mr. L. Guy Anderson (President, N.V.M.A.), Sir Thomas Baxter, Professor J. B. Buxton, Sir Daniel Cabot, Viscount Chelmsford, Professor T. Dalling, Sir Weldon Dalrymple-Champneys, Mr. H. W. Dawes (President, R.C.V.S.), Sir John Fryer, Sir William Gavin, Mr. G. N. Gould (Hon. Secretary, N.V.M.A.), Group Capt. Sir Louis Greig, Mr. Walter Hutchinson, Miss Eunice Kidd, Mr. C. A. Loombe, Mr. J. N. McClean (Deputy President, N.F.U.), Mr. Henry Martin, Major Durham Matthews, Lord Moran, Lord Stamp, Sir Archibald Weigall (President, R.A.S.E.), and the following officers of the Trust: Dr. W. R. Wooldridge (Scientific Director), Professor W. C. Miller (Director, Equine Research Station), Mr. S. F. J. Hodgman (Director, Canine Research Station), Col. G. Barnett (Secretary, Equine Research Station), and Sir Cleveland Fyfe (Organizing Secretary).

The Duke of Norfolk said they had been asked there that day for their good will and support. Slowly but surely headway had been made since the day, five years ago, when Dr. Wooldridge had approached him in regard to the foundation of the Trust. To-day he had complete confidence in the future of what he believed was going to prove of real benefit to every farmer and animal lover in this country.

He must pay his own personal tribute to Dr. Wooldridge—the man who started it and who had never let up for one moment: indeed, the worse things looked—and they had had their bad moments in the early days—the harder he worked. (Hear, hear.)

If they read the reports before them they would realize that the Trust was making headway as a united body. The Trust had a very ambitious programme, but with their help it would do something for the benefit of the health of every animal in this country—a conception which, he believed, had never been considered or even thought of before.

With their permission, he would read a letter which had been received from Sir Charles Lidbury, President of the Association of Bankers, whose absence they all regretted.

In his letter Sir Charles Lidbury expressed his keen disappointment at his inability to be present and added: "It remains for me but to express the hope that the lunch of the Veterinary Trustees will be a successful one, buoyed up, as the members must be, by the certitude not only of the better recognition of their invaluable profession but of the obviously rapidly improving character of the services which they are not only privileged to render, but in fact do render, to the agricultural community."

Dr. W. R. Wooldridge, M.Sc., M.R.C.V.S., Scientific Director for the Trust, said: The development of the Trust, to which your Grace has paid such tribute, has only come about by the co-operation of a devoted band of people of whom the Duke of Norfolk is the head. (Hear, hear.) I want to express my grateful thanks, and that of all my colleagues, for the invaluable help which you, Sir, have given to this cause. (Applause.)

Just over five years ago, a mysterious craft was launched from the Mansion House and set out to voyage in the relatively poorly charted seas of Animal Health. Many thought the craft and its crew would perish, for its destination, though uncertain, was afar off and its bunkers were empty of the golden fuel so necessary for such a journey. But those who saw failure forgot, like so many to-day, that the best fuel for any young enterprise is that which the good ship "The Veterinary Educational Trust" had on board. This pioneer ship went ahead, fired with the composite spirit of independence, a will to succeed, and a determination to serve the cause of animal health and through it that of the nation. Some, including many eminent men and women, have helped to stoke the ship along its provisional course in search of at least a million pounds. The then Minister of Agriculture, Mr. Robert Hudson, gave the ship his blessing, but many who could have helped have waited to learn more of the voyage and of the way this ship of discovery was to apply itself to the tasks of those it set out to serve.

At first the Trust began simply; it called at the port of Undergraduate Education and awarded, as funds permitted, scholarships to veterinary students. It has called also at the ports of Post-

graduate Specialization and of Research, and has clearly indicated its determination to make a success of its journey for the improvement of animal health. Since its start it has awarded 48 undergraduate studentships and scholarships and 16 Research Fellowships, and has latterly turned its attention to the establishment of research stations. This has been done during a difficult period—a period when appeals could not be vigorously made owing, at first, to the Red Cross Agricultural Fund, and more recently to the Agricultural Distress Fund. To-day, however, the situation is changed. It is true that the times are no more propitious, but on the other hand, the need for the Trust is even more urgent than at the time when it was launched. All political parties are now agreed on the need for maintaining a prosperous agriculture, and on the place which livestock production must occupy in the farming programme. Other animals, too, are assuming even greater importance than before, and export figures of bloodstock of all varieties continue to grow. Curiously enough, however, the average health of our livestock remains at comparatively low level, as, indeed, does the average care which they receive. I say without fear of contradiction that the present cost to stock-owners and the nation of the annual losses arising from animal disease in this country runs into at least fifty million pounds. Furthermore, heavy losses arise from the inefficient application of scientific knowledge already to hand. Whilst it is acknowledged that the stability of agriculture in this country must be based on a sound livestock policy, it is not so generally appreciated that this can only come about if the losses which I have mentioned are substantially reduced. To achieve this, stock-owners must take greater advantage of the animal health service available to them to-day, and these animal health services must be considerably improved. The facilities for veterinary education must be increased; greater opportunities for postgraduate specialization must be made available, and a considerable extension of research directed to livestock problems must take place as a matter of urgency.

It is appreciated that the State is doing something towards this end. A new Bill for the improvement of facilities for veterinary education and the control of unqualified veterinary practice is impatiently awaited by all livestock owners. Increased financial support has been given to the Agricultural Research Council. In view of these developments, it is necessary for me to say at once that the work of the Trust is designed to be complementary to and to supplement that of the State. We look forward with confidence to continued co-operation from the Agricultural Research Council, a co-operation which will be stimulating to us both and will avoid overlapping. The gap between research and practice is often all too wide, and so the Trust is shortly to embark upon the development of a hospital and laboratory diagnosis service working intimately with veterinary practitioners throughout the country. By the concerted efforts of these and other developments, it is reasonable to expect that in time the nation will have a veterinary service second to none other in the world, and an unsurpassed standard of animal health.

Our new programme is complete at every stage. We aim at the progressive raising of the standards of veterinary education by collaboration with the veterinary colleges and by giving assistance when necessary to students of merit striving to enter that profession. We have established and hope to extend the award of postgraduate training scholarships designed to encourage young veterinary surgeons to specialize as research workers or in some clinical field. The creation of a cadre of specialists and consultants within the veterinary profession, in my opinion, is long overdue. This specialization is further encouraged by the award of research fellowships, these fellowships being designed to enable young men and women to devote some of the best years of their lives to research work under the ideal conditions of academic freedom and scientific independence.

Experience has shown, however, that the major problems of industries are usually unravelled by team-work, and the Trust has, therefore, decided to embark upon a plan to develop Research Stations dealing with problems of ill-health and management of the different species of domesticated animals. The sites for the Equine Research Station, the Canine Research Station, and a group of Farm Livestock Research Stations have been decided. The Equine Station is gradually getting under way; those for dogs and for farm livestock will be developed as quickly as priorities, equipment and funds permit. The Farm Livestock centre will be a group of stations each devoted to a single species but catering as a group for the needs of smaller livestock, such as goats, rabbits, poultry and pigeons, as well as for those of the larger farm animals. These research stations are being established within a few miles of each other and of the University of Cambridge. In this way the scientific workers will mutually stimulate each other, will help each other with their problems, and will have the advantage of collaboration with the veterinary and other scientific departments of the University.

Research stations, however, can all too easily become isolated from practice. To avoid this, the Trust is intending to create a link between these centres, the veterinary schools and the practitioners. It is intending to establish a series of county hospitals for animals, coupled with a laboratory diagnosis service. A veterinary hospital service working in full co-operation with practitioners and research workers is long overdue, and the Trust is convinced that provided the work of these hospitals is under full veterinary supervision and that the local practitioners are all on the visiting staff, the service will be most welcome and will greatly enhance that already available to animal owners through their own veterinary practitioners. Hospital facilities will be provided for both farm livestock and the smaller animals, and practitioners will be able to send patients to the hospital for continued treatment by themselves or, if they so wish, nursing and treatment by the veterinary staff of the hospital.

If these services are to achieve their maximum good, it will be necessary to train canine nurses and other lay veterinary technicians. The Trust hopes to play its part in this training, both at its research stations and hospitals, the training being arranged in full consultation with the Royal College of Veterinary Surgeons. The hospitals will collaborate with existing animal hospital services, provided these latter hospitals come into the general scheme of professional supervision of their clinical activities, for it is only in this way that the best treatment can be made available to the suffering animal.

It will be seen, then, that the Trust is developing a chain of help which will greatly re-inforce the practitioner services available to animals, and will be of considerable benefit to every livestock owner, be he resident in the country or in the town. Indeed, the work of the Trust will be more far-reaching than this, for it will in many ways assist animal owners throughout the world, a fact recognized by certain organizations in the Dominions and elsewhere overseas, which organizations have already contributed to the funds of the Trust. These many activities you will find described in brief in the First Report of the Trust, which is placed before you to-day.

No one will disagree with the view that the aims of the Trust are important to the future of animal health and the dependent livestock industries, and all must be equally impressed with the need for an efficient organization if the financial stability is to be achieved which alone can enable the Trust, effectively to carry out its work. During the war years, it was impossible to build up machinery throughout the country to enlist the active help of all potential supporters. Even now there are great difficulties before us, particularly those occasioned by petrol and transport restrictions. Further delay, however, cannot be tolerated without serious risk of failure and, therefore, the Council of the Trust has adopted its new programme for immediate execution. We estimate, as you will see from the booklets placed in front of you, that the full realization of our new programme will involve an annual expenditure of the order of £200,000. That seems a large sum, but in terms of an insurance premium paid against a capital loss of 50 million pounds in the same period, it is but a flea-bite. To raise that Animal Health Fund, however, support must be mobilized throughout the countryside, as well as in the cities and towns, and that is the task upon which we are embarking to-day.

We need the support of every society and association concerned with the well-being of animals. We need the support of firms engaged in the supply of equipment for the animal industries, and those meeting the needs of animal owners in other directions. Those organizations which utilize as their raw materials products of animal origin will benefit materially from the successful prosecution of our campaign, and we look with confidence to them to help us. Above all, we shall, if we are successful, render great service to farmers and all other owners of animals, and hence it becomes their duty to help us to help them. It is, therefore, particularly pleasing to welcome guests who are representative of so many diverse interests as you are to-day. One thing we can be sure of, and that is that we are all united in our belief for the need for an animal health campaign. It is, therefore, with considerable confidence that I appeal to you to give us 100 per cent. support for the establishment of our County Committees, which with your help will build up our Animal Health Fund and carry our programme to its fulfilment with the utmost possible speed.

I wish to assure you all that so far as those of us who are intimately associated with this independent, virile Trust craft, pioneering the seas of animal health, are concerned, we will not spare ourselves to carry into full effect the plans which I have outlined nor to bring our ship safely to port. (Applause.)

Sir Archibald Weigall said that speaking in his dual capacity as President of the Royal Agricultural Society of England and also as Chairman of the Governors of the Royal Veterinary College, it was his privilege to commend the new programme to all those present. This country was the stud farm of the world, particularly where the requirements of conformation and character were concerned. Having that wonderful asset it was always a marvel to him that the country as a whole left the safeguarding of that asset to haphazard individual effort. Experience showed, however, that if a cause was sufficiently good in this country, no one need have "cold feet" in going forward.

So long as he was in the position he now was at the "Royal" he would do everything he could to further the cause put before them by Dr. Wooldridge, which he was convinced would be of incalculable benefit to the great asset we possessed in the livestock of this country.

Mr. Howard W. Dawes, F.R.C.V.S., President of the Royal College of Veterinary Surgeons, expressed the great personal pleasure it had afforded him to attend, in that capacity, the Council of the Trust. Having done so, he felt that he could the more confidently support His Grace's view that the Trust had turned the corner. (Hear, hear.)

As President of the ruling body of the veterinary profession he must say that the first report of the Veterinary Educational Trust, which was put before them that day, had been to him a most interesting document. Indeed, he felt that if the Trust wanted any propaganda to put before the public, that report was the finest weapon that the Trust could use. (Applause.) For the first time, in a correct and well-reasoned measure, the immediate aims and resources of the Trust, together with its financial aspirations, were put in a straightforward manner before the general public, and he thought the issue of the report marked the most important milestone which had yet been passed.

One point that struck him as being of particular interest was the establishment of a third research station—or group of stations—in a field which the general public might regard as of most importance, that of farm livestock. Another feature which appealed to him as the head of the Royal College of Veterinary Surgeons was the fact that the Trust had been careful to site this station in close proximity to a university: that would bring all three stations adjacent to the University of Cambridge. It was all too true that research had hitherto been conducted in watertight compartments and there was no doubt that in siting their stations in proximity to a university they would have available a source of experience and thought which would be all to the good not only of the field stations but of the university itself. (Hear, hear.)

He wished now to refer to the most important aspect of the scheme—the establishment of a County Hospital Service. That, he ventured to say, was very long overdue. It had been left largely to the animal welfare societies to provide such animal hospital services as there had hitherto been in this country. This was an ambitious scheme but, given good will and support by all parties interested, he felt that there was every chance of its fulfilment. (Hear, hear.) Its progress, particularly in these days, must necessarily be slow: an ambitious scheme of establishing an Animal Hospital Centre in all counties was one which could not be brought into being overnight—but in the course of years it must reach a successful culmination.

He could assure His Grace that the body which he represented was prepared to give them every facility that it could. It would give sympathetic thought to any scheme propounded by the Veterinary Educational Trust.

He could not sit down without paying a tribute to the Duke, who from the very outset had been a tower of strength to the Trust, and as President of the R.C.V.S. he would like to say how much they, of the Royal College, had appreciated his position as President of the Veterinary Educational Trust. (Applause.)

Mr. J. N. McClean, Deputy President of the National Farmers' Union, voiced the regret of the President, Mr. J. Turner, at his inability to be present. He (the speaker) had been involved in the foundation and development of the Trust from the beginning and he knew what could be done by the Trust from the point of view of the farming community. He did hope that they would soon see, from his own organization and other sources, the money coming forward to bring into satisfactory being the new campaign which was being inaugurated that day. They saw throughout the whole country to-day the great interest which farmers were taking in the problem of disease in animals, and speaking for the farmers' organization he would say that everything that they could do to further this great project would be done. (Applause.)

Mr. L. Guy Anderson (President, N.V.M.A.) said that he had been invited, on behalf of the National Veterinary Medical Association, to offer some brief comment on the programme outlined for the Veterinary Educational Trust, and he found himself somewhat embarrassed in that everything that he had previously prepared to say had already been said by other speakers.

Dr. Wooldridge had indicated to them something of the importance which animal disease had in the livestock industry of this country and he would like for a moment to stress to them the particular importance of animal disease at the present juncture.

The Government had made it perfectly clear that they depended upon agriculture to a large extent both for the production of foodstuffs to feed our people and for the saving of dollars, and the Minister of Agriculture also had made it clear that he depended upon the livestock industry in great measure to implement the necessary good work which agriculture as a whole must do. Under those circumstances the importance of the veterinary profession in this programme became immediately obvious.

His Association was actively engaged at this moment in plans to see what contribution it could make towards the solution of the crisis through which the country is passing, and as their deliberations progressed they were impressed with the very great necessity to increase research in animal disease and for the rapid application of the results of that research in veterinary practice. The programme as outlined for the Veterinary Educational Trust did seem to him to work absolutely hand in glove with that idea—to increase research, to increase specialization and to ensure the application of new knowledge to fields of veterinary practice. On these grounds alone the N.V.M.A. must be very whole-heartedly behind the efforts of the Veterinary Educational Trust.

He wished to refer particularly to two things. One was the question of specialization. He did not believe that they could offer adequate specialization to the degree in which it was offered in human medical practice, but specialization to a greater degree than hitherto was absolutely vital if our science was to progress. The first necessity of specialization was to secure the right men and the facilities to train them, and the Veterinary Educational Trust had made it perfectly clear that they had plans to do this.

The second point was the question of the development of animal hospitals. This was a very difficult problem—one with which the whole profession had been faced for a long time and for which it had been unable to find a satisfactory solution. When they thought of hospitalization they must think not merely of the health of the individual animal but of the scientific development which could accrue and of the educational facilities which could be provided by a system of hospitalization. It was, therefore, particularly gratifying to find an organization which was specially interested in hospitalization and was prepared to develop it along national lines.

He would close by thanking those who had asked them there to hear of the proposed development of the Veterinary Educational Trust, and by assuring them that the National Veterinary Medical Association were quite confident that that development would be rapid and that it would be successful. The Association was wholeheartedly behind the Trust and most anxious to co-operate in any way possible. (Applause.)

The Duke of Norfolk concluded the proceedings with the words: "Thank you for coming here—I think you will agree with me that we are moving forward on a united front and that nothing can hold us back."

Dr. W. T. H. Williamson, Director of the Agricultural Department of the British Council since its formation in 1945, has been appointed lecturer in charge of the newly established Department of Soil Science in the University of Aberdeen. During the war, Dr. Williamson was adviser in agricultural chemistry in the University College of South Wales, Monmouthshire. Previously, he was for eleven years chief chemist to the Ministry of Agriculture in Egypt.

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Weekly Wisdom

Throughout the ages it has been recognized that the aggregation of peoples in cities is accompanied by intensification of epidemic disease and by lowering of the standard of health; and social history consists largely in a statement of efforts to counteract these maleficient tendencies by regulation and improvement of housing, of sewerage, of water supplies, of ventilation, and of food.—Arthur Newsholme (1927), "Evolution of Preventive Medicine."

NOTES AND NEWS

Diary of Events

Oct. 22nd.—Special Meeting of Council, N.V.M.A., at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, 11.30 a.m.

Oct. 24th.—Autumn Meeting of the Eastern Counties Division, N.V.M.A., at Colchester (Red Lion Hotel), 2.15 p.m.

Oct. 24th.—Meeting of the Sussex Division, N.V.M.A., at Brighton (Old Ship Hotel), 2.30 p.m.

Oct. 29th.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at the Royal "Dick" Veterinary College, Edinburgh, 2.30 p.m.

Oct. 29th.—Meeting of the Ayrshire Division, N.V.M.A., at Ayr (Hannah Institute), 2.30 p.m.

Oct. 30th.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Lockerbie (Lockerbie House Hotel), 2.15 p.m.

Oct. 31st.—Meeting of the Lancashire Division, N.V.M.A., at Liverpool. (*See Notice.*)

Oct. 31st.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds (Hotel Metropole), 2.30 p.m.

Oct. 31st.—Meeting of the Biochemical Society, at St. Thomas's Hospital Medical School, 2.15 p.m.

Nov. 15th.—Annual Meeting of the Society of Women Veterinary Surgeons, in London. (*See preliminary Notice.*)

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"The Veterinary Record"

The Editorial Committee has appointed a Sub-committee with the following terms of reference: "To consider what steps, if any, may now be taken to improve *The Veterinary Record* as a scientific journal and as the organ of the profession."

The Sub-committee would appreciate the receipt from readers of suggestions for the improvement of the Association's journal in any respect. They should be addressed to the Editor at 36, Gordon Square, London, W.C.1.

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PERSONAL

Births.—BARBER-LOMAX.—On October 5th, 1947, to Patricia, wife of J. W. Barber-Lomax, M.A., B.V.SC., M.R.C.V.S., at Garsdale, Calrows, Bury—a daughter.

RICHARDSON.—On October 11th, 1947, at Widmore Road Maternity Unit, Bromley, Kent, to Joan (*née* Reynolds, M.R.C.V.S.), and Basil A. M. Richardson, of 5, Station Road, Orpington, Kent—a son.

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Exhibition of Sporting Prints from 1790 *to* 1840 *in aid of St. Dunstans.*—The British sporting spirit is reflected with great vitality in the collection of fine coloured aquatints and mezzotints to be exhibited by Messrs. Ellis & Smith, 16b, Grafton Street, W.1, from Monday, October 27th, to Friday, November 28th, inclusive. So important and varied a collection of sporting prints has not been seen on exhibition in London for 15 years, and the whole of the proceeds of the descriptive and illustrated catalogue which contains a list of over 100 prints, goes to St. Dunstan's work for the blind.

The story of Field Sports and "The Fancy" is illustrated by the art of such masters as Stubbs, Marshall, Alken, Pollard, Wolstenholme, Sartorius, Rheinagle, Shayer and others. The prints depict sports of the shires from 1790 to 1840, and relate to hunting, shooting, angling, coursing, boxing and coaching. In addition, the Exhibition includes a selection of original paintings by many of the artists already mentioned.

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"SAME STANDARD OF RESPONSIBILITY FOR MILK AS FOR WATER"

LORD WOOLTON'S SUGGESTION TO LOCAL AUTHORITIES

The compulsory and universal pasteurization of milk was suggested by Lord Woolton, war-time Minister of Food, as one means of preventing infection from food and drink when he opened a one-day conference of the Central Council for Health Education in London on Thursday of last week.

Lord Woolton said it had been estimated that 1,500 to 2,000 died annually from tuberculosis conveyed by infected milk. In 1944 more than 200 people were killed by enteric fever and dysentery and 3 700 children under two years of age by diarrhoea and enteritis. At least one in 20 farmers was sending out tuberculosis-infected milk, and he asked whether it was going too far to suggest that local authorities should accept the same standard of responsibility for milk as for water.

In general, the standards of food-handling and commercial hygiene were far below what they should be. Existing knowledge and even our limited resources were not used.

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R.A.V.C. Old Comrades' Association

The first post-war reunion dinner of the Old Comrades' Association was held on October 3rd at Willerby's Restaurant in London, this being the 19th reunion since the Association was formed. Some difficulty had been encountered in finding a hostelry willing to accommodate the large number of old comrades who were eager to attend, and even then it was a condition that the party should be limited to 250. In consequence many who doubtless would have wished to be present were unable to attend; even so, the company exceeded by nearly half the largest number attending upon any previous occasion.

There is always an atmosphere of true fellowship at any meeting of an old comrades' association, for friendships born of service are not easily forgotten and they mature with the passing of time.

It was good for those of us present, privileged to serve in the Corps, to renew these friendships and to recall the times spent together as members of that happy, though large family. Most of us will not meet again for another year, but the few hours spent together have refreshed us for many days to come.

Amongst distinguished senior officers present were Brigadiers H. S. Mosley, the Col. Commandant; C. A. Murray, our Director at the outbreak of the war; J. J. Plunkett, recently appointed Director, and our beloved Brigadier, George Kelly, whose name will forever be associated with the great days of the expansion of the Corps and of whom the happiest memories will be cherished in the hearts of those fortunate enough to serve under him.

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DOGS FOR PIT RESCUES

During evidence at the public enquiry at Whitehaven into the causes of the explosion at the William Mine on August 15th, it was stated that R.A.F. police dogs were used for the first time in the rescue operations. The Chief Inspector of Mines, Professor A. M. Bryan, who conducted the enquiry, said that the results were encouraging, and that the National Coal Board had now agreed to the training of dogs for this purpose.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
Sept. 16th to 30th, 1947	11	—	101	—	7	3
Corresponding period in—						
1946	2	2	—	—	5	9
1945	8	1	—	—	45	51
1944	5	11	—	—	3	129
Jan. 1st to Sept. 30th, '47	87	103	861	1	64	29
Corresponding period in—						
1946	69	33	—	7	66	326
1945	88	110	—	6	96	753
1944	138	83	—	7	80	994

NOTE.—**The figures for the current year are approximate only.**
*** Excluding outbreaks in Army Horses.**

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at September 30th, 1947, was at follows:—

ENGLAND	WALES	SCOTLAND	TOTAL (GREAT BRITAIN)
8,799	10,936	9,596	29,331